NEW-YORK FARMER,

AND AMERICAN GARDENER'S MAGAZINE.

VOL. VII.—No. 6.] PUBLISHED MONTHLY, AT No. 33 WALL STREET, NEW-YORK, AT THREE DOLLARS A-YEAR, IN ADVANCE. [NEW SERIES—VOL. II.

D. K. MINOR, Proprietor.] FOR JUNE, 1834. [SAMUEL FLEET, Editor.

ORIGINAL COMMUNICATIONS.

Visit to the Dairy Farm of Mr. David S. Mills. By the Editor.

On the 5th May we crossed the Williamsburgh ferry, and after a walk of five miles on the turnpike road to Jamaica, reached the residence of Mr. Mills. The appearance of the country along this road has been improved, within three or four years, by an increased attention to the cultivation of the land. There is, however, ample room for further improvements, both in tillage and in all those ornaments of a rural residence that indicate comfort, taste, and enjoyment at sweet home. Among the objects of garden culture are seen fields of peas and raspberries, planted in rows. The former were four to eight inches high. We saw one farmer harrowing a field of sward ground, the sod of which had been broken by cross ploughing. The ground was very moist, and it seemed as though he might harrow until July before he could kill the grass. Had he carefully turned his furrows in the first place, used a roller, and then harrowed lengthwise with his furrows, he would have saved labor and added to the fertility of the land.

Mr. Mills' farm consists, including 30 acres of salt meadow land, of 200 acres. He bought it last summer for $8,000, and commenced operations on it last September. It had been much neglected for years past, and a great part of it allowed to be overgrown with moss, wild grass, and cedar brush. In six months from this time, after spending four or five thousand dollars in improvements, twenty thousand dollars would not probably buy it. Since September last Mr. Mills has put on upwards of two thousand loads of manure obtained from the city. These loads nearly equal those of two horse team among farmers.

The first object that struck our attention on approaching this farm is a large stone building for stabling cows. It is 154 feet long, 40 wide, 20 high to the eaves of the roof, and the wall 2 feet thick. The stone of which it is built was obtained from the fields of the farm. There are two rows of stalls for the cows, between which is an open space, paved with stone, ten feet wide, into which opens a door of equal width at each end of the building. In the centre of the sides of the building is a similar passage way, for the purpose of carrying out the milk. The long passage is for the convenience of preparing their food. Each stall is nearly three feet wide, and the whole building will accommodate 100 cows. There are 12 windows on each side, for the purpose of light, air, and throwing out manure. Along the whole length of each side of the building, four feet high, is to be a receptacle for the manure, made tight with thick plank, and sufficiently wide, ten feet, to back in a cart. The cows stand on plank and pavement of stone. A space of about two feet wide runs the length of each row of stalls, paved with small stone, on which the cows place their fore feet. From this space the flooring of plank has a gradual slope to carry off the urine. A raised walk of planking, about three inches high and two and a half feet wide, along the side walls of the building, arrests the urine and causes it to run out at the ends of the building, where, we believe, Mr. Mills intends to have cisterns for receiving it. In the loft over the stalls, will be rooms finished off for lodging the hands who milk, and have charge of the cows; also, bins for the grain and feed, and a mow for the hay.

Mr. Mills has had much experience in the milk business—having for many years carried it on in the city. He has acted on the principle that an abundance of the best kind of food was the most profitable. Accordingly, he rejects distillers' swill, and feeds his cows with Indian meal, oil cake, ship-stuff, and good hay. He mixes two quarts of Indian meal and two of oil cake, with about the same quantity of brewer's grain, or ship-stuff, for a mess, twice a day; besides this he feeds with hay twice a day. Instead of hay in summer he uses green fodder—sows four bushels of oats mixed with one of corn to the acre—will sow several acres of corn and ten or twelve of rye, at the rate of three or four bushels per acre. The rye comes in first, then the oats, and after the corn. By sowing each of these at different times, a constant succession of green fodder is obtained until late in the fall. Mr. M. will undoubtedly give attention to perennial grasses, and to succulent crops. In consequence of thus feeding his cows, they are always in a thriving condition. In the fall and winter, with the same course of feeding, they are in fine order for the butcher, to whom they are sold as soon as they begin to decrease in milk. They bring him, for beef, from $40 to $55, averaging $45 per head. Their places are immediately supplied at $25 with calf.

When milked twice a day, the hours for milking are 2 o'clock in the morning and 12 at noon. The milk, when brought from the cows, is carried to the kettles, which are kept standing in large tubs of water fresh from the pump, and is poured into them through double strainers. Each cow will average about ten quarts per day; some, of course, will give as many as twenty or more. The number of cows are upwards of 150. The price which Mr. M. always obtains is 6¼ cents per quart.

150 cows, 10 quarts per day,	375 galls.
These give in 365 days . . .	136,875 "
Price per gallon	25 cents
Amount per year,	$34,218.75

An enterprising and intelligent farmer, who supplies milk to the inhabitants of one of the largest towns in Connecticut, recently called on us to direct him where he could find a milk establishment in the vicinity of the city, from which he could learn a few lessons. He said he found by close calculation that his cows averaged the year round only four quarts per day; and that his feeding was deemed superior to that of farmers generally. He visited several establishments, but, we believe, did not obtain much satisfaction. On reading this article, he will, we doubt not, take a journey of 100 miles to see what Mr. Mills has done.

Most of the milk used in this city is sold at 4 cents per quart, a very considerable portion of which is water; but Mr. Mills goes on the principle of never allowing a drop of water to be added to his milk. Taking into consideration the rich and wholesome food of his cows, their healthy and cleanly condition, and the consequent pure and rich quality of the milk, Mr. Mills is not only deserving of 6¼ cents per quart, but of the thanks of the community for setting such a worthy example in furnishing this important article of food. We would not imply, however, by these remarks, that there are no other milkmen who furnish pure milk of the first quality.

It requires eight men to attend the cows and sell the milk. These men, every day in summer, milk twice and go to the city, and feed the cows twice, and curry them once. In addition to this labor, there is that of throwing out the manure, and keeping the stables clean. The ground food is put in tubs, and the hay in racks. The practice of cutting the hay is not yet adopted to any extent.

His Indian meal costs $1.50 per 112 lbs., and his oil cake, which is procured from New-Jersey and New-London, $1.25 per 100 lbs.

For 15 years, Mr. M. followed the usual practice of feeding his cows with slops and a little hay. Since 1823, he has pursued his present practice, and finds it more profitable. This arises principally from the additional quantity and superior quality of the milk, enabling him to obtain good customers and full prices, and from the increased price of his cows when sold to the butcher.

The value of the manure made by upwards of 150 cows is estimated to be worth, on the farm, $1,000 per annum. It is easy to see that all this, regularly applied, will enable Mr. M. to make his farm one of the most productive in this section of the country.

Mr. Mills has a first rate improved short horned Durham bull. He intends, hereafter, to devote more attention to rearing his own stock. His facilities for selecting breeding cows of the desired properties are very great—having it in his power to test them practically and fully as to their disposition to fatten, the quality and quantity of their milk, and to other properties that make first-rate milkers.

It is our intention to visit this establishment again, when the improvements now in progress will be further advanced, and when we hope to have the pleasure of finding Mr. Mills at home, which was not the case on the present visit. This last circumstance must be our apology for the imperfection of this hasty notice.

Fire Blight—Hoof-Ail—Canada Thistle—Ornamental Trees, &c. By HENRY SEELY. [For the New-York Farmer and American Gardener's Magazine.]

MR. EDITOR,—Having, at the request of your agent, Mr. K., become a subscriber to the Farmer, I feel it my duty to afford you my mite in filling your paper. It is my first attempt to write for the press; you must excuse all faults.

My father came to this place thirty-six years ago: I was then a boy about eleven years old. Our nearest neighbor was four and a half miles to the north, seven miles to the west, about fourteen to the south, and some more than five miles to the east; and no road or track, save that which we made. Thus, you see that we were comparatively in a wilderness; but not so now. Mr. B., who has written for you, of whom you have highly spoken in a former number, is a man living a few miles from me; is reputed as a worthy man, and did possess a very handsome situation. He neglected the tried and proved method of farming, such as this country would warrant, and made, I do not know how many, experiments, until he was obliged to sell his farm with his pleasant and hard-earned privileges, and now another enjoys them. Some years ago I heard that Judge B. was losing his pear trees by a disease called the fire blight. My business called me by his house; I stopped to see them. It was August; they were loaded with fruit; the soil under them covered with a thick strong sod, and the sprouts under the trees from one to four feet long; some of them with a few limbs dead, and some all dead, and others not injured at all. I keep the grass, weeds and sprouts, clean under my trees, and they do not die with that disease. They produce abundantly, and thrive well; and travellers say they are the best they ever saw. Thus, a plain proof that his trees were starved to death for the lack of that nutritious virtue, from the soil, which they so much need at that season of the year when that fatal disease attacks them.

Much has been said in your former numbers of the black tongue in horses, but I see nothing of hoof-ail. This disease attacks them in their feet; the horse is first lame, sometimes in one foot, sometimes in two, and at other times in all. They then swell. Those who are unacquainted with the nature of the complaint, apply spirits of turpentine, and a variety of such like applications, which irritate the complaint, torture the animal, and thus the use of many valuable horses are for a long time lost, and some forever. I have been called upon a number of times for counsel in the disease. I direct to take from a peck to half a bushel of poke-weed roots, according to the number of feet diseased, put them into a large kettle filled with water, boil them over the fire until they become soft like a turnip poultice; when cool, to be bound on the horse's feet and legs with cloths, as high up the legs as they are swelled; and once in two hours, or as often as the poultice becomes dry and filled with the fever, pour on the liquor which remained after the roots were boiled, for 24 hours, or as long as the fever and swelling remain. This done, wash with soap and water, and keep them clean, and they are soon well. I have not heard of an instance where it has failed. I cure a founder in the same way, with the addition of physic, and bleeding in the neck, when necessary.

When I came on to my farm, twenty-two years ago, there was a number of patches of Canada thistle. I kept them from seeding by repeatedly cutting them for four or five years, when I commenced ploughing early in the spring, I ploughed once a week. By the 1st of September they stopped coming, and have not come any more on that land since. I have destroyed acres in that manner; and had all the farmers in the country taken the same care that I have, there would not be any in the country.

I observed a serious loss to the city in their choice of shade trees along the walks; instead of a rich valuable locust once in ten feet, as there might be, which, long before now, with but little care to preserve them, would supply the ship-yards with the necessary pins and posts for bulwark around the plankshire for the ships in building, and would ever yield a sufficient supply by replacing as they were cut, they have some elm, swamp maple, sumach, and other useless trees. I think if our state would set locust or some good useful forest trees along the whole line of our canals, where there are no villages, and where the banks are liable to injuries by washing or sliding, that they would be a valuable improvement to preserve the work, besides the value which the timber would in time grow to.

I wish you to publish the road act of the latest revision, manner of furnishing the necessary apparatus for working and laying new ones, and whether a man who has had a road laid across his improvement can be compelled to open it after the damage is assessed, before he has his pay.

When you send us a description of an invention, be kind enough to tell us the process, as, how the sugar beet is converted into sugar, how the bird lime is made, how the Yankee machine is made which makes the hooks and eyes, how the cheese is made which sells for ten cents a pound, &c. &c.; and not fill up your numbers with hearsay stories, and when we have read them, are none the wiser. My children would be pleased with the history of the culture and manufacture of indigo. You may find it in J. Morse's Universal Geography.

Bilious cholic is a painful disease, occasioned by cold, cramp, and an obstruction of the bile, which in many cases baffles the skill of our most eminent physicians. I have succeeded in a number of cases, in an early stage of the disease, by giving a dose of laudanum with hot water and a profuse sweat, which gave ease in a short time. After the patient had become easy and comfortable, and the cramp subsided, then gave physic to cleanse and regulate the system, and the cholic will not return.

As we here, in this country, cannot hire labor for six to twelve pence a day, we find it necessary to attend to the culture of such articles and crops as our soil and climate will produce, and which will pay our laborers more than double what they pay in Europe after selling our stuff at a far less price, and paying heavy taxes, though as yet our taxes are some less than theirs. I cannot find time to cultivate roses and flowers, such as you so highly recommend. They would add materially to my cost and labor, but would pay but little; for this reason, if we can obtain more useful knowledge which is domestic, and less of that which is foreign, it would be abundantly more useful. HENRY SEELY.

Onondaga, March 29, 1834.

REMARKS.—We hope Mr. Seely will let us hear from him frequently. He should recollect that we have subscribers of various tastes and occupations—some who think that we say not enough on "roses and flowers." We never intended our paper should be devoted exclusively to agriculture, but to that variety of useful information which will make it acceptable to every person fond of reading.

Woodside's Revolving Harrow and Seeding Machine. By the EDITOR.

At page 161, Vol. VI., we gave an imperfect drawing or rough sketch of this machine. We have since seen one of full size, built for the Hon. Stephen Van Rensselaer, of Albany. Our favorable impressions are strengthened, both from examination of the implement and from what we learn of the opinion of those who have recently seen it in operation near Brooklyn. We understand that it broke up and commingled a hard and lumpy piece of ground by going twice over, in a manner superior to twenty operations of the common harrow. The whole apparatus consists of a cart of the ordinary size, having a very simple, and in our opinion a very efficient, appendage for sowing all kind of seeds, and a revolving cylinder, containing 39 teeth, which renders the ground perfectly soft and fine. If necessary, a roller can be attached. The saving of seed, and the additional crops by the regularity with which the seeds are sown, will, with a large farmer, pay for the cost of the implement in one year. Those who use ashes, bone dust, lime, or other fine manure, can have it spread from the cart, and thoroughly incorporated with the soil. It is managed with ease by one hand and two or three horses, performing what would in the ordinary way require at least four hands and eight horses. By a windlass, the person who drives, and who also rides in the cart, can readily and instantly raise the harrow to pass over rocks and stumps. It brings to the surface sticks, weeds, wire grass, &c. &c. It is well calculated to destroy moles, mice, and grubs, that come within reach of the teeth. By having one side of the teeth sharp, it will cut up boggy and rooty soils that are too hard to plough.

The cylinder or harrow makes 6 revolutions, while the cart wheel makes one. Consequently, when the horses move at the rate of 2 miles per hour, the teeth revolve at the rate of 12. The following calculations will show the quantity of work done in one hour, viz.:

Circumference of cart wheel, 17 feet, × length of cylinder, 5 feet, = one revolution of wheel, 85 feet, × revolutions in one minute, 15 feet, = 1,275 superficial feet in one minute, × 60, = 76,500 per hour, ÷ .9, the number of feet in a yard, = 8,500 square yards, or 1¾ acres in an hour.

Mr. Alexander Birbeck, of Brooklyn, is

agent for the manufacture and sale of this machine for Long Island.

CERTIFICATES.

The subscriber has recently invented, patented and tested, a Revolving Harrow and Seed Cart. This improvement on harrows is such that it has not the least resemblance to those now in use, save that of the teeth of the cylinder, 39 in number, the rotary motion of which prevents their clogging.

In addition to the harrow, there are sieves for sowing small grain of every description, with uniformity, and to counteract all irregularity in sowing, if any; the cylinder, following in the rear of the seive, throws the grain into drills of about two inches and a half apart. The seives are of different grades, suited to the size of the grain to be sown, and also the quantity to be introduced into poor or rich soil, as your judgment may dictate.

I conceive it unnecessary to enumerate here all the conveniences and advantages connected with the implement, as they will naturally suggest themselves to those who may use it. There is one, however, which, as regards convenience, I cannot omit naming, which is, that every thing appertaining to harrowing and seeding may be attached to and detached from the cart in 5 minutes, so that the cart is always at your service for other purposes.

Any communication (post paid) respecting the purchase of a right or rights, will meet with prompt attention. James D. Woodside, Patentee.

Washington, January 16, 1834.

We, the undersigned, farmers, having witnessed the operation of Capt. James D. Woodside's Patent Revolving Harrow, do hereby certify that it is admirably calculated to pulverize the earth, (particularly when it is in a hard and lumpy state,) by one or two operations, in a manner superior to any other harrowing that we have seen performed. We are of opinion that it will prove a very important invention to the farming interest. It possesses one great advantage over the common harrow by the rotary motion of the cylinder, which effectually prevents its clogging, and also that it can be set to loosen the ground from one to six inches deep, in a very quick and simple manner. It does not appear to be liable to get out of order, and can, in five minutes, be attached to, and detached from, the cart, so that the cart can be used for other purposes. We perceive it has an appendage for sowing different kinds of grain, which, like the harrow, is very ingeniously and simply applied.

David Johnson,
R. Parmele,
Abraham Lott,
Jeremiah Lott.

Flatbush, Long Island, May 5, 1834.

The undersigned witnessed, on yesterday afternoon, the operation of your newly invented and patented Revolving Harrow and Seed Cart, and so far as its capacity for practical usefulness could be tested by the local situation of the field selected for the experiment, the result was to them highly satisfactory. The advantages which it possesses for pulverizing the soil at one operation, and preparing it for small grain of every description—its apparent simplicity of construction renders it, in every respect, far superior to the harrows now used. The rotary motion of the cylinder prevents its clogging. The implement is managed with ease, and must, we think, recommend itself to practical farmers. If we are not greatly mistaken in our judgment, it has only to be known to be brought into general use, and ranked amongst the most ingenious and useful inventions of the age.

With great respect, your most obedient servants,

Nicholas Harper,
B. F. Pleasants.

Washington, June 1, 1833.

We, the undersigned, having witnessed the operation of Captain James D. Woodside's Patent Revolving Harrow, do hereby certify that it is admirably calculated, by one operation, to pulverize the earth in a manner superior to any thing of the kind we have ever seen; in fact, its superiority over the common harrow, as far as we have seen its operation, must, in our opinion, make it particularly valuable to farmers. One of the advantages it has over the common harrow is, that the rotary motion prevents its clogging.

The power of two horses is all that is required to work this implement.

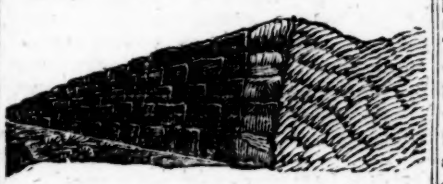
In addition to harrowing, we perceive he has a convenience for sowing the grain, which, like the harrow, is very ingeniously contrived.

Jesse Brown, District of Columbia.
Isaac Sherwood, Auburn, N. Y.
J. W. Crawford, New-London, Con.

Washington, June 4, 1833.

A Cheap Method of making Fence of a Durable Character. By L. M. T. [For the New-York Farmer.]

If the ground be inclined in a direction opposite to that of the fence, begin by turning three or four furrows with a side-hill plough down hill; let them be thrown by the spade up the hill; plough three or four more on the same ground, and let them be thrown above the others; the ground will then present this shape—



Pick up your paving stones, if you have no better, or quarry about half as many as are requisite to make an ordinary 3½ feet wall, and place them against the bank formed until you have a fence four feet high, and from nine to fifteen inches thick, and what is better, one which will not fall down, and which has been tested by the writer of this article to resist the frost, when all other methods of making stone walls have failed. The bank must incline one foot in the four, or four and a half, of height. This fence is made at less expense by one-half of stone and one-third of ordinary wall in the price of laying. If designed to stop sheep, it must be staked and sided in this shape—

The same fence can be made on level ground, and has been by myself, when it will present nearly the above profile, staked and sided, and is effective against both sheep and cattle. L. M. T.

Hoosick, Rensselaer co., March 21, 1834.

Tobacco for the Destruction of Ticks upon Sheep. By D. K. Y. [For the New-York Farmer.]

Mr. Editor,—Having noticed an article in your last number recommending tobacco for the destruction of ticks upon sheep, with which I agree in all except the mode of applying it,—instead of wetting them with a sponge before they are sheared, I think it would be more advisable to have a tub, or some other large vessel, standing by the shearers, and to have the sheep dipped into it after their fleeces have been taken off, in which case the ticks could in no possibility escape destruction. I have seen this method practised upon a flock of about 100 sheep, amongst which there could not be one found that had not fifty ticks upon it, and some of them two or three hundred; but now there cannot this number be found upon the whole flock.

The stalks of tobacco, which are precisely as good as the leaves, can be bought at about one cent per pound, of which 15 lbs. are sufficient to serve 100 sheep.

D. K. Y.

To prevent Mice from injuring Nursery Plants. By Ratio. [For the New-York Farmer.]

Mr. Fleet,—I noticed in the Farmer an extract from the Northern Farmer, complaining of the depredations of mice in his nursery and among his fruit trees. I have seen many complaints of the same kind, and believe the following remedy will be found effectual:

Take one ounce of cicuta seed, or one pound of the herb: pour on to it a gallon or more of water: let it stand twelve hours. Then put into the water as much wheat as it will wet; let it stand 12 hours longer, till it has absorbed all the water; then scatter the wheat in places frequented by the mice, and I am persuaded there will be little complaint after. The same may be done with 2 ounces of nux vomica, treated in the same way.

Ratio.

May 9, 1834.

Uses and Cultivation of the Pie Plant or Rhubarb. By D. F. Ames. [For the New-York Farmer and American Gardener's Magazine.]

Mr. Fleet,—America is blest with a favorable climate, and peopled by natives from all parts of the earth, who variously cultivate our various soil; and yet our markets are not so well supplied with fruit and vegetables as those of less favored lands. This arises, in part, from the very limited demand for any thing out of the common way. Animal food is of a more heating and irritable nature than vegetable; consequently less adapted for our summer season. Indeed, at any time, the wholesomeness as well as luxuriance of our table is greatly magnified by these salutary additions. Among their number, I wish to call the attention of your readers to the Turkish rhubarb, *rheum rhaponticum*. This is a valuable plant, and only requires to be known to receive general cultivation; it has the important recommendation of presenting itself for the table, when few others for a similar purpose are to be had. The petioles or stems of its large fan-like leaf are the part to be prepared. When the leaf is fully expanded, cut it close to the main stem, remove the green top, then deprive the stalk of its outer skin by stripping it down, and not by cutting with a knife; then cut it in small lumps, not too thin, and either boil it in dumplings made of short paste, or bake it in tarts, using sugar, lemon, &c., to the taste. It is found greatly to improve the flavor of apple tarts or pies, by mixing it in the proportion of one-third to two-thirds of apples. The latter fruit having been kept through the winter generally loses its flavor, and becomes flat and insipid. But the good housewife will soon find a variety of ways to cook this delightful plant. I shall only add that it has the reputation of being very serviceable in aiding the discharge of bile, and conclude with a few remarks on its culture. The medical rhubarb is principally brought from the mountains of Tartary, and is the dried root of this plant. It grows there in great abundance upon the declivities of the mountains, preferring a light sandy soil, on the south side, but in the shade; therefore procure a place in a warm shady border of your garden, loosen the earth, *far and deep*, enrich the spot with some rich light soil, and place the root upon a small quantity of old stable manure, so that its top, before any leaves have started, be six inches below the surface;

over the crown of the root, strew a little more manure and cover it with fine mould. In the spring, when the leaves begin to appear above ground, draw the earth round them, and when the stem of the leaf has attained the length of six or eight inches, they may be cut for use. The main stem will attain the height of six or eight feet. The root for planting may be obtained at the seed stores and nurseries.

As early as February or March, some growers of this plant put barrels or large boxes over the plants, and cover the whole with heating manure. Thus treated, they will grow very rapidly. Others let them stand in open warm situations, taking no other pains than keeping the ground free from weeds, and cut the leaves as wanted. They are propagated by separating the suckers or roots from the main stem. In a few years one plant will make a dozen or more.

D. F. AMES.

Cultivation of Grape Vines in Pots. By the EDITOR.

Very considerable attention is now being paid, by gardeners in England, to the cultivation of the vine in pots. In some instances the long cuttings from large vines are curled around the inside of the pot, leaving above the soil but one or two eyes, which, in consequence of the numerous roots that are made, speedily obtain a vigorous growth. By giving the vines a circular training, they will become quite ornamental, and take up but comparatively little space. By putting the pot containing the vine in another, and filling the space between them with soil, a uniform moisture may be easily preserved. To families living in towns and cities, the subject is of much importance; to the ladies in particular we recommend it. Mr. Mearns, gardener to the Duke of Portland, thus expresses himself in the Horticultural Register, on this method of cultivating them in England:

"By my method I shall introduce vines into any farmer's garden in the kingdom, where none had previously been; and at the expense of little besides ten or twelve lights of glass will insure him from 500 to 1000 fine bunches of good grapes the first season! If any one can boast the same, the fact has never been laid before the public, else it is likely I should have seen it. I go thus far, on purpose to raise a curiosity, and to excite every degree of emulation, knowing, that if such can be excited, the system will very soon discover itself to be most important to the country. The successful cultivation of the grape is certainly one of the simplest branches of the art, both in pots and in borders; if a vine be left entirely to itself it will soon become fructiferous, after having been for years under the most rigid discipline to little purpose. A vine, excited to a high degree of luxuriance, is neither the most fruitful nor produces the finest or best grapes. I have seen Hamburghs, from three to six and eight pounds weight each bunch! The vines comparatively *weak*, and vine border very shallow, and by no means rich!

"As curiosity will be created by such a remark, I beg to state that such grapes were repeatedly produced by a Mr. Minnett, formerly gardener to Mrs. Powes, Berwick House, near Shrewsbury.

"I have there seen bunches of Hamburghs from fifteen to sixteen inches long, and from eight to ten inches across the shoulders; the berries all of a perfect black, as close as they could grow together, and the size of a boy's *large* marbles.

"I have coiled into pots this season upwards of a hundred branches; forty and more of which I have got into action. I shall continue to introduce others till the middle of June; if I can *starve* them into dormancy by cold bleak exposure, or by burying them in clay-cold murkey graves or caves! or by being sunk under a wall on a north aspect. I am begging of all my friends the long branches which they cut out in pruning, and as far as Somersetshire, Worcestershire, Staffordshire, &c. &c., so that I expect, in a short time, to have a stock of plants sufficient to produce 1000 bunches the first season."

"Put in your cuttings of young wood, in coils of three, four, to five feet, blinding all the eyes, except the two uppermost. I choose to leave two eyes till the finest gets the lead, and is safe, for fear of accident to one alone; I then slip the weakest off. If placed into a bottom heat, and the eyes be buried about an inch or two in the pots, in the course of coiling, by the time the best eye appears above the soil, as strong as the bud of a fine asparagus! the whole coils beneath will be completely occupied with young active roots; and by the time the shoots are four feet long, the pot will be a perfect mat of those eager feeders. Then shift and top the shoot and never leave on any laterals; plunge as before into a fine bottom heat and encourage the main topmost eye alone to push; and lead it on, but without laterals, till it is again four feet long; when, if the pot is full of roots, shift, top it as before, and encourage again the uppermost eye only to start; and by the time it is another four feet, if not over-potted before, it will require a third shifting. If required, you may stop at every four feet, five or six times; but three shiftings will be found enough for the season; and you had best not suffer it to reach above from twelve to twenty feet of clear bearing wood. At the end of the season you will have shoots one inch and a half diameter, and with fine bold eyes, and full of fine set bunches for the next season!

"You will readily perceive, that, by such an early and abundant accumulation of young vigorous roots, and by such a top and bottom management, it is no extraordinary miracle to have every cutting a fruit-bearing shoot at one season's growth; and by a proportional coil of large older wood, it will be equally obvious to you how readily such will produce a fine crop the first season!"

"The extraordinary progress of my grapes upon the coiled vines, placed in a bottom heat, astonishes every one. In another season, when I have got my wood early ripened, I intend to start some in October, and to have plenty of fine ripe grapes by the middle of February. I have some at this time half grown, the branch being only cut from the vine, and placed in bottom heat 20th of November! 'Can such things be!' Yes, easily and simply so. I intend to keep some coilers as late as the middle or end of July, before they are excited, and then to place them in a bottom heat. The fruit, by doing so, will be perfectly ripe before the dull weather of autumn sets in, but not so with the wood; by which circumstance they will retain the leaves vigorously through the winter, and consequently the fruit will retain its plumpness till April or May!

"You will now say this is going too far, but it undoubtedly may be done. New ripe grapes in February, and plenty of old grapes till the end of June! There is little beyond the power of man, if he will but exert those faculties with which God has endowed him."

Retrospective Criticisms on the First Series of the New-York Farmer, Vol. II. Nos. 2 & 3. March and April, 1829. By the EDITOR.

CLIMATE OF THE MIDDLE STATES AND OF GREAT BRITAIN.—At page 49 is a long and interesting article, from the pen of Judge Buel, on the subject of the horticultural productions of the two countries.

FOREIGN PLANTS IN OPEN GROUND.—The winter of 1828–9 was severe. Mr. Prince, of Flushing, gave a list of those that had stood the severity of the season. He promised to continue the list. It is not too late to make the promise good.

BOT FLY.—The natural history of this insect does not appear to be sufficiently known. Professor Eaton, of Troy, gives the following:

The genus to which this fly belongs contains more than a dozen species. Two species are common about Troy, New-York, and probably in all the Northern States, which I will here describe.

Class, Insecta; Order, Diptera; Genus, Oestrus.

Generic Character,—Antennæ (horns) disjointed, very short, sunken; face, broad, depressed, vesicular; mouth, a simple orifice; feelers, two, two jointed, sunken; tail, inflexed beneath.

Equi, (leg nitter,) wings, whitish, with a black band in the middle and two dots at the tip. Deposits its eggs on the hairs of horses' legs, in the month of August. From observations made during the three last summers, I believe this species to be harmless. I do not believe the bot is ever caused by it.

Veterinus, (throat-nitter, bot-fly,) wings without spots; body, iron rust color; sides of the thorax and base of the abdomen furnished with white hairs. A little smaller, and much more agile, than the leg-nitter. Deposits its eggs in the skin under the throats of horses, in the month of September, and with them an acrid liquor, which gives the horse the pain of a bee's sting, at the instant of contact; hence, this swift-winged species is the dread of horses.

Whoever has an opportunity to see the bot in the recent fæces of a horse, should put a quantity of it into a close tin, or wooden box, of the capacity of a quart or two, and keep it in a warm place, until some of the larvæ become flies. Then determine the species, by accurately comparing them with the descriptions here given. Should it prove to be the species veterinus, we could safely adopt the following conclusions.

1. That the nits deposited in the skin under the throats of horses become minute larvæ (maggots), and make their way into the passage to the stomach folds, until they are of a size to destroy that organ, unless they are passed off by some fortunate cause.

2. Should it be thus demonstrated, that the bot is the larvæ of the throat-nitter, common sense would suggest an effectual preventive. A piece of oil-cloth fastened under the throat, for three or four weeks, commencing the last week in August, must be a perfect defence.

SUGAR MAPLE.—Mr. Buel recommends this tree as one of our most valuable trees for use and ornament.

Its *sap* affords an article of indispensable family use, which is manufactured at the most leisure of the year; its *timber* is valuable for the cabinet maker and the carpenter, and ranks next to hickory as fuel; its *shade* is umbrageous and refreshing; its *form* symmetrically

beautiful; and its *growth* is perfected in almost every soil. A plantation made upon the north or bleak side of the farm buildings, or the fruit orchard, or in belts around permanent enclosures, is highly useful as a protection—constitute a most interesting feature of rural scenery, and will ultimate in substantial profit to its proprietor. The grounds planted are but very little injured, at least for years, for ordinary purposes of tillage or grass. In districts where the maple is not of indigenous growth, or where suitable trees cannot be obtained for a plantation, the defect might soon be remedied by planting a nursery. Seeds may be gathered by bushels at the time of the early autumnal frosts, or obtained from seedsmen in our cities. They should be sown in the fall or spring, after gathering, upon a bed of good mould, slightly covered, and kept free from weeds. They generally will not grow until the second season. After standing in the seed bed two summers, they should be transplanted into nursery rows, and there nursed till they have acquired size for final planting.

Average Price of Flour in Philadelphia.—From the year 1785 to 1828, a period of 44 years, the average price of flour was $7.42. The lowest price was $4.72, and the highest $12.50.

Flax Seed.—Mr. E. C. Ruggles goes into a calculation to show that it is profitable to cultivate flax for the seed alone.

Manure.—A writer on the agriculture of Holland incidentally says—

"If night soil and urine were properly appreciated by the farmers of the United States, they would not manifest so much disregard to its collection and application. In the city of New-York, there are yearly made more than *fifteen thousand tons* of night soil, and *ten millions gallons of urine*, independent of that from horses and cows, most of which is thrown into the river, at an expense to the citizens of at least 20,000 dollars. The former made into composts, and the latter used in irrigation, would greatly augment the vegetable products in the vicinity of the city.

NEW PUBLICATIONS.

Farmer and Gardener, and Live Stock Breeder and Manager.—This is a beautifully executed weekly publication, published at Baltimore, by J. Irvine Hitchcock. It is intended to succeed the American Farmer, which was discontinued in March last. Mr. H. will, we are fully persuaded, make his paper both interesting and useful, and, we truly hope, successful and profitable.

Alphabet of Botany, for the Use of Beginners. By James Rennie, M. A., Professor of Zoology in King's College, London, revised and corrected for the use of American Schools, by Arabella Clark, Principal of the Female Department of Mechanics' School, New-York.

On a former occasion we spoke in commendation of this little and truly scientific work, as published in England. Mrs. C. has rendered it an Anglo-American work—has added useful and convenient questions—has made additions and omissions, that doubtless recommend it to teachers. It is to be regretted that the engravings are not as well executed as those of the English edition, and the additional drawings not as accurate representations of nature.

Alphabet of Scientific Gardening for the Use of Beginners. By James Rennie, M. A., Professor of Zoology, King's College, London. 18mo. pp. 120, William Orr, London, 1833. [Continued from page 139.]

Electricity.—Electricity is in several circumstances similar to heat. Its great influence on vegetation is proved by electrified seeds and buds germinating sooner than those not electrified; upon which principle Bertholon proposed its being employed in gardening. But this has been less followed up than it probably deserves to be, as, in the more delicate management of greenhouse and stove plants, it might probably be of considerable use.

Experiments may be made on the subject with Mr. Bennet's electric doubler attached to the pendulum of a clock.

Injurious Substances.—Plants are precisely similar to animals in respect to injuries caused by too much or too little food, as well as by what is of a deleterious or poisonous quality.

It is accordingly found that among the substances just mentioned as constituting the wholesome food of plants, they are injured by too much or too little water, and by too much or too little carbonic acid gas, and by too much or too little light or heat. Saussure found that when he confined plants in carbonic acid gas, they were as much injured as the consumptive patients whom Dr. Beddoes caused to breathe oxygen, which, in due quantity, is indispensable to health. Food, indeed, which is rich, concentrated, and without a due mixture of what is less rich, is injurious to both plants and animals; and hence, plants will not thrive on distilled water largely mixed with carbonic acid gas without atmospheric air, or at least its azote, to qualify it; no more than a man will thrive on nothing besides rich beef tea, without bread or other qualifying substances.

When, on the other hand, there is not sufficient water, every body knows that plants will wither, and when not enough of carbon, it is equally ascertained that they become pale or yellow; while a deficiency of azote to cresses, cabbages, mustard, and turnips, will render them vapid and deficient in flavor.

Besides these causes of injury, there are certain substances which act even in smaller quantities as direct poisons. Arsenic, for example, will completely destroy the life of a plant, or of a seed, and M. Leuchs proved that the nine thousandth part of a grain was hurtful. Opium, likewise, will put the sensitive plant to sleep in half an hour, and laudanum will kill a kidney bean in one day. Cherry laurel water produces effects similar to arsenic. Iron, in the form of oxide, at least, when in any considerable quantity, is by no means favorable to vegetation, though iron finds its way in minute portions into most plants, and may be observed in some vegetable ashes in the form of the red oxide, or rust. It may be observed in the same form in soils of a reddish brown color, many of which are far from barren; though they certainly do not owe their fertility to the iron, but are fertile in spite of it, owing to some other causes.

De Candolle seems to doubt iron being injurious, but the experiments of Dr. Home put this beyond question. One drachm of copperas, or sulphate of iron, in the rich mould of a garden, killed some plants of barley when an inch high: and he found most dark colored infertile undersoils, or *till*, owed their barrenness to iron. This result was confirmed by Sir H. Davy, who placed a primrose root in a solution of oxide of iron in vinegar, which soon acted as a poison, and turned the leaves yellow; and he proved that the iron had entered the plant by testing the decoction with infusion of galls. Plants, as I have observed, which are grown by cottagers in old iron, or white iron pots, do not thrive, no doubt from the same cause, and it may be on the same account that granite soils are infertile.

Magnesia, it has also been found, is poisonous to plants; and hence, burnt lime from the limestone containing magnesia, at about Belfast, Durham, and some parts of Yorkshire, Derbyshire, Leicestershire, Shropshire, and Somersetshire, when laid upon land, has been found to prove very injurious. It may be that the small particles of magnesia, which are insoluble in water, and do not readily attract carbonic acid gas, get into the minute suckers at the tips of the roots and obstruct them, though no solid substance whatever can get into a plant; for it is found that, when mixed with fat peat earth, magnesia does good rather than harm, because, in this case, it finds abundance of carbonic acid gas, by which it is converted into a carbonate of magnesia, that will partly dissolve in water by means of humic acid, and, consequently, supply plants with wholesome nutriment.

It must be evident, that besides having a due quantity of wholesome food provided for plants, this must be so placed as to be within reach of the suckers of their root fibres, since they cannot move about in search of it themselves; a subject which, with some others, may be treated of under the head of Physics: a term now commonly used, and pretty generally understood, to comprehend explanations of facts from mechanical, as distinguished from chemical, principles.

GARDEN PHYSICS.

The first topic to which I request attention under this head, is the direction in which plants, and their several parts, naturally grow; a thing of important consideration in all the varieties of training, as much injury may be done by opposing natural laws, while much benefit may accrue from turning these artificially to advantage.

Direction of Plants.—On going up a steep hill we feel ourselves forced to stoop forwards by an invisible force, as if it were pulling the body down to the slope. It is this force which causes a stone thrown up in the air to fall down again, and which causes a soap bubble and a balloon to rise up above the ground by pulling down from above them the heavier air, which, being very moveable, will not rest on the top of a light body, no more (and for the same reason) than a sheet of water would rest on the top of a cork.

It is inferred from certain ingenious experiments, that it is this same force which causes most plants to grow upright with their roots more or less perpendicular to the stem. Doberein-er, a celebrated German writer, proved by experiments, that the same species of plants will rise higher in condensed than in rarefied air, and hence, on high mountains, trees become dwarfish; a circumstance also in part caused by the light there being more bright and intense.

On the supposition, that the roots of plants descend into the soil either from their dislike to light, or their natural propensity to extend themselves in search of nourishment, Dr. Grew, and recently M. Dutrochet, found that when kidney beans were placed in a suspended box, with air above them, and holes below to admit light, they sent their roots down through the holes into the light, and not into the earth in the box.

M. Dutrochet also repeated the ingenious experiment of Mr. T. A. Knight, of planting kidney beans in moistened moss, and placing them on wheels, revolving both vertically and horizontally by a shaft from a water mill. The beans germinated well, and the result was curious. The vertical wheel, which went at the rate of 150 turns in the minute, caused all the roots to point outwards, precisely in the direction of the spokes of the wheel, while the stems pointed as invariably towards the centre, where, in the end, they all met.

On the horizontal wheel again, which went at the rate of 250 turns in the minute, the roots, instead of running directly downwards, as they would have done if at rest, pointed in a slanting direction outwards, while the stems pointed aslant inwards, forming a cone at some distance above the centre.

Lord Kames mentions a plane tree growing on the high wall of a ruin, which sent a root down along the wall to the ground; a circum-

tance easily accounted for on the same principle, though it has been adduced as a proof of instinct, if not of reason, in the tree itself.

From these facts, it is evident that the number of tall plants, such as Jerusalem artichokes, on a particular piece of ground, cannot be increased, as some have fancied, by making the surface irregular; nor can more trees rise on a small hill than on a spot equal to its base, though this will not apply to strawberries, New Zealand spinach, and other creeping or spreading plants.

Exposure and Shelter.—The degree of light, and of exposure, has a great mechanical effect on plants. In the interior of forests and crowded orchards, the wind produces much less effect than on solitary trees in a garden or park. When crowded, the tops push up into the light above, and not being agitated by the wind, their trunks do not thicken, nor become stunted, to prevent the blast making a greater pull against the roots.

On the other hand, when standing in an open situation, trees, being freely exposed to every storm, give every advantage to its violence, by the wide-spreading of their branches.

In accordance with this, solitary trees become greatly larger than those which are crowded, while their system of root is always proportional to the branches, in order to afford a heavier ballast and a stronger anchorage for counteracting the greater spread of sail displayed in the wider expansion of the branches. The same is true of all or most garden plants, which extend in proportion to their room. Hence the necessity of wide planting when it is required to have plants with large spreading heads, as in the instance of New Zealand spinach; and on the other hand, of planting closely when plants are required to be tall, and at the same time slender, a case which more rarely occurs than the other.

Recent writers on botany have endeavored to show that the tapering tuber of the carrot, the beet, and other simpler plants, are not properly roots, or at least that they have more the characteristics of stems than of roots; in other words, as every plant grows in two directions, one downwards, the other upwards, the spindle formed tuber of the carrot is alleged to belong to the upward or ascending portion of the plant, rather than to the downward or descending portion. Independent of structure, however, this would appear to be equally rational as to allege that a man's feet belong to the upper portion of his body, but it appears to be correct enough to say that the partly horizontal portions of the iris, though under ground, are not roots, but stems; and it must be obvious that the creeping runners of strawberries are not stems.

Weak stems, which cannot rise high in a perpendicular direction by their own rigidity, are furnished with several means for effecting this. Some straggle up irregularly amongst other thick-growing plants, as the bramble and bitter-sweet; others, like the hop, the kidney-bean, and convolvulus, twine closely around others stronger than themselves, and when they cannot meet with such, several shoots will twine round each other to give mutual support.

It is important to remark, that different species, in twining for support, follow different laws, one going from right to left, of which there are twenty genera, and another from left to right, of which there are ten genera. A hop-plant, for instance, directs its course round a pole with the sun; but if untwisted and forced to take an opposite direction, it will injure or perhaps kill it. If a honey-suckle do not meet with support, it twists into a spiral from right to left. It is of importance to attend to these circumstances in training.

Mechanical Texture of Soils.—Though it has been stated above, that the roots, at least of trees, are generally proportional in extent to the branches, this must be taken with some limitation, inasmuch as it will in part depend upon the texture of the soil. The perpendicular extent of roots, for example, is greatly influenced by the looseness or compactness of the soil; and hence, Du Hamel found the tap root of an oak, which had been sown in a rich deep soil, to be four feet in length, while the stem rose only six inches high. Carrots, and similar deep penetrating roots, when they meet with a stiff soil, not easily divisible, are not only dwarfed, but split into branches or twisted into a spiral. When certain roots, also, such as those of timothy grass, are planted in the moist soil natural to the plant, they are fibrous; but when on the top of a dry wall, they become tuberculated; for the purpose, it would appear, of laying up a store of nourishment in case of accidental drought. An alder root was found amongst gravel, marked all over with the contour of small stones.

Since then the mere texture of a soil, independently of the food of plants which it contains, produces such remarkable effects, it must be of great importance for the gardener to attend to this circumstance.

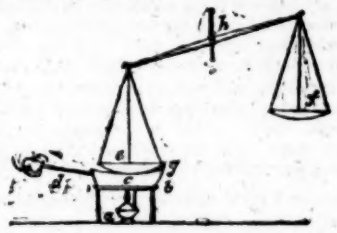
Circulation of Water in Soils.—It is no less necessary for the due nourishment of plants, that the water by which soils are moistened have a proper movement or circulation, than it is for the animal food, when digested, to pass through the stomach and have a proper movement through the bowels. In the case of the animal, when this movement in the bowels is too rapid, as in cholera, the food is hurried off before it can be conveyed into the blood, and when it is too slow, as in costiveness, the mouths of the minute tubes are pressed upon and obstructed, so that the food cannot obtain admission. It is much the same with plants, when the soil is so loose and porous as not to retain moisture, or so stiff and compact as not to allow what water it imbibes to circulate. In the latter case, indeed, plants are more precisely like animals affected with costiveness, in that the rejections of the digested food are retained so near the mouths of the nutrient vessels, as to greatly hinder their getting at the proper materials. The difference in plants arises from their having to lengthen their rootlets to get beyond the rejections thrown out, which they obviously cannot do in a stiff hard soil. Even independently of having thus to continue their roots amidst a mass of such rejections, the water, in consequence of stagnating, and of course preventing a fresh supply from above, becomes soon exhausted of the nutritive materials with which it may have at first been mixed.

This is not mere theory, as some may be apt to consider it; for it has been proved by numerous facts, that the most fertile soils are those which are so compounded as to admit of the greatest, most minute, and most immediate distribution, diffusion, and circulation of water, or rather moisture, for when water is found in such portions as to be distinguished from the soil which it moistens, this will form, in most points of view, a watery and bad soil.

The chief causes of the circulation of water may be traced to the principle which makes a stream run down a slope. When rain accordingly falls on the level surface of a loose porous soil, it will sink into it; and if this, instead of being level, is sloping, the water will both sink partly into the soil, and also move slowly through it towards the bottom of the slope. If the soil is so loose to any depth as to cause this water to drain nearly all away, the first warm day will expand the water nearest the surface into vapor, and raise it into the air; and as soon as by this means the surface becomes dry, the moisture below will gradually rise, in the same way as water may be seen to rise into a bit of blotting paper, or a piece of lump sugar.

It hence becomes obvious, that though the surface soil be sufficiently porous to admit the due circulation of water both upwards and downwards, if the under soil at some little depth (say from less than a foot to two feet or more) be a stiff clay, a hard marl, or a level rock of any kind, the rain water, instead of circulating wholesomely, will settle there, from being out of the reach of the sun's influence to raise it; and in the case of the level rock, having no declivity to run off by. It is in such cases that draining becomes useful; or, where it can be effected, forming a gentle slope of the whole surface, which would farther operate on the circulation of the water by obtaining a more powerful influence of the sun, and thereby increasing the heat. The fancy stated in books, that the runs of earth worms or dew worms are important for draining off water, is without any foundation.

Tests of the Texture of Soils.—One of the best methods of ascertaining the capability of any soil to take up and retain moisture, is that described by Mr. C. Johnson, for which purpose he employs the following apparatus.



a, is a small lamp; *b*, a stool, with a hole in the seat for receiving *c*, a shallow tin vessel, closely covered, but having a pipe, *d*, for the escape of steam; *h* is a pair of accurate scales, such as are used by apothecaries and goldsmiths. In order to employ this apparatus, put a small quantity of the soil to be tried upon the top of the tin vessel, in which water is kept briskly boiling for about half an hour, so as to thoroughly dry the soil by expelling its moisture. Take ten grains accurately weighed of this dried soil, and add to it, by means of a quill, a drop or two of pure water; if distilled water can be had, so much the better. Weigh the whole a second time, which will now be a few grains above ten. Take out the weight of the water from the scale, leaving in the weights of the dried soil, and suspend the beam, so that the scale *e* may rest on the lid of the tin vessel, the water in which it is still kept boiling; then with a stop watch note the exact time which the added water takes to evaporate, as will be shown by the beam of the balance becoming level. Mr. Johnson found, that soils requiring less than twenty-five, or more than fifty minutes, to evaporate the added water, and bring the balance to a level, were always proportionally unproductive; the first, from having too much flinty sand, and consequently too few interstices to allow the water to escape.

Rich soil, treated in this way, required thirty-two minutes to bring the beam to a level; chalk twenty-nine minutes; poor flinty soil, twenty-three minutes; and gypsum, only eighteen minutes.

A very fertile soil from Ormiston, Haddingtonshire, containing, in 1000 parts, more than half of finely-divided materials, among which were eleven parts of limestone soil, and nine parts of vegetable principles, when dried in a similar way, gained eighteen grains in an hour, by exposure to moist air, at the heat of sixty-eight degrees Fahrenheit; while 1000 parts of a barren soil, from Bagshot Heath, gained only three grains in the same time.

Mr. Johnson farther found that one hundred parts of burnt clay, when exposed in a dry state for three hours to air saturated with moisture at sixty-eight degrees, took up twenty-nine parts of water; that gypsum, in similar circumstances, took up only nine parts, and chalk only four parts.

Another method of testing the texture of soils is by taking what is termed their specific gravity; that is, comparing what they weigh in air with what they weigh in water. Sufficient accuracy for practical purposes may be obtained by drying two different soils, at an equal distance from a fire, or in an oven, at the same time, and then weighing in the air a pound of each in a thin bladder with a few holes near its top, or neck. When the weight has thus been obtained in the air, the bladder may be put into

water, letting it sink low enough to permit the water to enter through the holes in the neck, in order to mix with the dried specimen of the soil. The weight in water, divided by the difference of the two weights, will be the specific gravity, and the less this is, the greater will be the capacity of the soil to take up and retain water. Muschenbroek thus found rich garden mould to be 1630 compared to 1000 of water, and Fabroni found a barren sand to be 2210 compared to 1000 of water.

Or fill a wide necked pint or quart bottle half full with water, and add the soil to be tried till the water rises to the brim. Then if the bottle can contain one pound of water, and gains half a pound additional when filled in this way, half with water and half with soil, the soil thus tried will be twice as heavy as water, and its specific gravity will be two. If it only gain a quarter of a pound, its specific gravity will only be one.

M. Giobert ascertained that a pound of fertile soil contained, of flinty sand, about 4,400 grains, of clay about 600 grains, of lime about 400, besides seventy of water, and about twenty-five grains of inflammable materials, chiefly carbon. On a comparative trial of a barren soil, M. Giobert found that a pound weight contained about 600 grains of clay, about 400 grains of lime, and little or no inflammable materials. Mr. Grisenthwaite directs an equal portion of two soils, perfectly dry, to be introduced into two tall glasses, in the midst of each of which a glass funnel has been previously placed. The soils are to be put in so as to retain, as nearly as possible, their natural state when in the ground, and are consequently not to be too much pressed down. When this has been done, water is to be poured very gradually into each of the funnels, and it will rise up as it does in a piece of lump sugar into the dry soil, as may be seen through the glass. The more rapidly the water is seen to rise, the better will be the texture of the soils.

I shall next turn the attention of the beginner to the changes which food, taken up by the spongelets, or suckers, of roots, undergoes in the different parts of the interior of the plant, a subject which is usually termed *physiology*, though the original meaning of the word is merely a "discourse or treatise on nature." As I believe the term is well understood, I shall employ it here.

[*To be continued.*]

The American Journal of Sciences and Arts. Conducted by BENJAMIN SILLIMAN, M. D., L. L. D.

The April number of this popular periodical is, as usual, filled with varied and interesting scientific information.

We make a few extracts of original and translated articles.

CHOLERA.—Mr. S. P. Hildreth, of Marietta, Ohio, says,

"Not a single death by cholera, that terrible scourge, which has visited and made sorrowful so many places in the west, both above and below us, has occurred in Marietta. It may, perhaps, be attributed to its naturally healthy location, to the wide airy streets and commons, to the cleanly and sober habits of the people, and to the great abundance of shade trees, which every where deck our streets and door yards. It was observed, several years since, while the disease was yet confined to the eastern continent, that regions thickly covered with woods, and towns and villages in which grass plats and trees abounded, suffered much less, and in many instances not at all, from the cholera. It may be philosophically accounted for in the known property which the dense foliage of trees possesses, of decomposing the poison which generates miasmatic fevers, and with which the cholera was closely allied, from its prevailing mostly in districts subject to these diseases. Whatever may have been the cause, the inhabitants of Marietta have great reason for gratitude and praise to that Being who ruleth the destinies of man."

PRAIRIES OF ALABAMA.—Mr. W. W. M'Guire advances the opinion that these prairies once formed the boundary of the Atlantic ocean.

The prairies present a more lovely and fascinating prospect in the spring and summer, than the liveliest imagination can picture. They are then clothed in the richest livery of those seasons—

> "Plains immense, and interminable meads,
> Lie stretch'd before—where the wandering eye, ...
> Unfix'd, is in verdant ocean lost.
> Another Flora there, of bolder hues,
> And richer sweets, beyond our garden's pride,
> Plays o'er the fields, and showers with sudden hand
> Exuberant spring."

Herds of cattle and flocks of sheep are seen in the distance, cropping the fresh grass, or wandering at pleasure over the flowery region. Yet the absence of large trees is amply repaid by the rich garniture of grass, flowers, and shrubbery. The odors of the wild rose, hawthorn, &c. load the summer's breeze with the most delicate perfumes. During the hottest and most sultry weather, when in other places every thing is drooping and withering from excessive heat, a cool breeze is "ever on the wing." This is owing to the elevation of the prairies and the absence of timber.

CIRCULATION IN VEGETABLES.—Professor E. Emmons dissents from the received doctrine of the descent of cambium or elaborated sap.

In the farther discussion of the subject it will be my object to show that the descent of the fluids in vegetables is unnecessary, and never takes place in ordinary circumstances. I do not undertake to prove that the sap cannot descend at all, but that the sap in a vegetable deriving its nourishment from the roots only ascends, and that it is not a function of the leaf to elaborate the fluids, or to effect those changes in them, in order that they may be fitted for the nutriment of the vegetable.

1. It is evident that changes must take place in the fluids absorbed by the roots, to fit them for the nutriment of the plant. These changes commence, as soon as they are taken into the vegetable system: the most important change however is effected as they pass upward through the neck of the vegetable. This view of the subject is supported by the fact that the neck is the most important part of the plant. It is a vital part; divide a plant here, and it is destroyed. The structure of this part appears different. But what seems to favor, still more, the opinion expressed above, is the change which the fluids visibly undergo in passing through this part. To be convinced of this the reader may examine the *Asclepias Syriaca*, or milk weed. Divide the root below the neck, and the fluid which exudes is merely watery, but when the division is made at the neck, that peculiar milky fluid appears. In this case, we must admit that the fluid is changed as it passes upward, or, as Mr. Knight supposes, in the leaves, and then passes down to the neck and there stops. If the latter supposition be true, would not accumulations of sap take place in this part. But this is not the case.

2. No power has been pointed out which can cause a descent of the sap in the uninjured vegetable, while the roots remain in the earth. It appears to me that it is unphilosophical to maintain that gravity is a principal cause of the descent of the cambium, as Mr. Knight has stated in the following passages in the Phil. Trans. for 1803. "These causes, (that is, of the descent of the sap,) appear to be *gravitation*, motion *communicated* by the winds, or *other agents*, *capillary attraction*, and probably something in the conformation of the vessels themselves, which renders them capable of carrying the fluids in one direction rather than another, pp. 277-8. Again, when a tree is deprived of all motion by being trained to a wall, or when a large tree has been deprived of its branches, it becomes unhealthy, and not unfrequently perishes, apparently from a stagnation of the descending fluids under the rigid cincture of the lifeless external bark, p. 282. Another cause of the descent of the sap to the root, I have supposed to be capillary attraction and something in the conformation of the vessels themselves; I however consider *gravitation* as the most extensive and active cause of motion of the descending fluids of trees, p. 283." But if gravitation be the active cause, &c., how can the vegetable overcome this power so as to raise the fluids at all? As it regards CAPILLARY ATTRACTION, motion by winds, &c., I forbear to remark on them as causes of the descent of the sap. Of gravitation I would say, that we ought not assign it as an efficient cause of action or motion, where vitality exists.

3. The growth of stems can be effected where no leaves are developed. The vine of the potato growing in the dark or diffuse light of a cellar is almost destitute of leaves. It is a strong case to show that they are not required for assimilation. In all cases, the elongation of the branch and growth of the leaf take place simultaneously.

4. The evaporation of a large portion of the watery part of the sap so far inspissates it, that the descent becomes difficult. Gardeners know that watering delicate plants with barnyard water, clogs the vessels, and they die if the practice be long continued. If it be diluted with pure water, the practice is highly beneficial, showing us that the water is not poisonous. The phenomenon of vegetable nutrition and assimilation may be explained without bringing in the agency of the leaves. The spongioles take up water, more or less loaded with foreign matter, as carbon, common air, ammonia, and other alkaline salts. As soon as the fluids come in contact with the vegetable structure they are more or less changed. In their progress upward, especially in herbaceous plants, they are still more changed, and while passing through the neck. When the sap has arrived at the extreme branches, its assimilation is complete, and a part of it is employed in effecting the extension of the branches, or expansion of the leaves; the remainder is exhaled. That the fluids are changed, in their upward progress, before they have reached the leaves, is shown by the fact that the sap of the sugar maple is sweeter in the higher parts of the trunk than in the roots. Its specific gravity is also greater, and it is to be remembered that the maple is yet leafless. The elonga-

tion of the branches is finished in about three or four weeks, and the leafing is perfected in the same time. These two processes engross all the fluids, and bring into action all the energies of the plant. Afterwards the sap is differently employed, viz., in forming the annual layer, and in developing the buds. I have been led to consider the leaves as organs of exhalation, and not of assimilation. The power, namely, *vegetable irritability*, which causes the ascent of sap, is a vital property, and, like animal irritability, often acts periodically. Thus, after the long repose of winter, with how much energy do vegetables carry on their functions on the opening of spring. A few weeks only are required to transform a desert waste into a beautiful garden. It is not improbable that the leaves may assist in the elevation of the sap. After their expansion, not a particle of sap will flow from the wounded vegetable. They assist in this process by the rapid evaporation from their surface. That they may accomplish the functions assigned them, they seem to be fitted for the various situations in which they grow. In tropical climates they are largely expanded, in cold regions they are narrow, contracted and rigid. The circulation of vegetables is not entirely suspended during the winter. As we may still see the buds gradually enlarging, especially in sheltered places, as the vegetable draws its nutriment from the bosom of the earth, beneath its ice-bound surface, we find it preserving an elevation of temperature above the circumambient air. I wish to present the above remarks rather as hints, than established conclusions; they are offered for the purpose of calling the attention of philosophers anew to the subject, that something more satisfactory may be taught than we find in the existing systems of Vegetable Physiology.

CHAPTAL.—This distinguished chemist and statesman was a successful husbandman.

When, shortly afterwards, he retired to private life, he again devoted his time to studies. In the beet manufacture, he spent a large portion of his fortune, and he fed a large number of animals, as, for instance, 1,200 merino sheep, of the finest wool, with the residue of the beets. He increased, by his agronomical improvements, the value of his property so much, that the nett proceeds, which were fourteen thousand francs, amounted afterwards to sixty thousand.

SULPHATE OF LIME.—Chemists are not agreed as to the manner in which the sulphate of lime acts upon vegetation. In employing it, it is scattered with the hand upon the crops when the leaves are in their full development towards the end of April, or the commencement of May, at a moist, cloudy time, but *not* rainy; and those who perform the operation think, in general, that they administer a stimulant, while some suppose that it is useful in obtaining for the leaves a favorable moisture; but the clover and the sainfoin naturally contain in their stalks a considerable quantity of gypsum, and when the soil appears tired of producing these plants, it is commonly thought that the soil becomes exhausted of its gypsum, and that it is no longer in a state to furnish to them the *necessary* ingredient. This observation leads to the presumption, also, that the sulphate of lime enters, by a dose more or less considerable, into the composition of these plants. In this uncertainty, too much publicity cannot be given to any experiments which are likely to settle the question; and this consideration engaged M. Decquerel, member of the Institute, to communicate to the Academy of Sciences (in the session of the 7th of November, 1831,) some observations made by M. Peschier, Apothecary of Geneva, upon the influence which the sulphate of lime exercises in vegetation. M. Peschier had disposed two equal vases filled with siliceous sand slightly moist, and in each of which he had sown water cresses; one of the vases had been watered with pure water, and the other with water containing sulphate of lime in solution. Afterwards he reduced to ashes the cresses of the two vases, which had vegetated during the same time, and under the same atmospheric influences, and he found that in one hundred grains of the ashes of the cresses watered by *pure* water, there were twelve grains of sulphate of potash, and twenty grains of carbonate of potash; while that in one hundred grains of the cresses, watered by the water of sulphate of lime, there were eighteen grains of sulphate of potash, and thirty grains of carbonate of lime. M. Peschier afterwards submitted the remainder of the cresses, already watered by the water of sulphate of lime, to the continued action of an electric current during many days, after which he found that the ashes of these cresses included twenty-six per cent. of sulphate of potash. M. Peschier made similar experiments upon lucerne or Spanish trefoil, and he observes "*the sulphate of lime ought to be made use of in a state of solution, and not in a solid state;*" he concludes from it that the sulphate of lime does not, in times of drought, act by communicating to the plant its water of crystallization; water, which it will re-absorb in a time of moisture, but that its principal action is considerably to augment the proportion of the sulphate, and of the carbonate of potash, in the organization of vegetables. But here a question arises. Some earths are found in vegetables, as is proved incontestibly; but do these earths make a part of their proper nourishment. Physiologists appear not to agree upon this subject. The experiments of Saussure tend to prove the contrary.

INDIAN RUBBER CARPETS.—Having some Indian rubber varnish left, which was prepared for another purpose, the thought occurred to me of trying it as a covering to a carpet, after the following manner. A piece of canvass was stretched and covered with a thin coat of glue, (corn meal size will probably answer best,) over this was laid a sheet or two of common brown paper, or newspaper, and another coat of glue added, over which was laid a pattern of house papering, with rich figures. After the body of the carpet was thus prepared, a very thin touch of glue was carried over the face of the paper to prevent the Indian rubber varnish from tarnishing the beautiful colors of the paper. After this was dried, one or two coats, (as may be desired,) of Indian rubber varnish were applied, which, when dried, formed a surface as smooth as polished glass, through which the variegated colors of the paper appeared with undiminished, if not with increased lustre. This carpet is quite durable, and is impenetrable to water or grease of any description. When soiled, it may be washed like a smooth piece of marble or wood. If gold or silver leaf forms the last coat, instead of papering, and the varnish is then applied, nothing can exceed the splendid richness of the carpet, which gives the floor the appearance of being burnished with gold, or silver. A neat carpet on this plan will cost (when made of good papering,) about 37½ cents a yard. When covered with gold, or silver leaf, the cost will be about $1.00 or $1.50 a yard.

AMERICAN MANGLE.—This instrument, invented and patented by Mr. I. Doolittle, of Bennington, Vt., we have seen used, and we have conversed also with those who have employed it, and find that its use saves a great portion of the labor, and all the fuel usually employed in the process of ironing table and bed linen, towels, &c., besides being much more expeditious, and giving the articles a better lustre and whiter appearance. It is regarded as a valuable auxiliary, and by some is reckoned among the indispensable utensils of the laundry. We can confidently recommend it as a valuable acquisition to the conveniences of the family.

The History of Arabia, Ancient and Modern. By ANDREW CRICHTON. With Engravings and a Map; Harper & Brothers, New-York, 1834. Vols. 2, pages 418 and 422.

This ancient and celebrated country is but comparatively little known, although it has given religion and rule to half the world. But in proportion as the Mohammedan sword and faith is broken and weakened, knowledge and the arts will once more render Arabia respected, if not conspicuous. It is easy to see that such an event is approaching—that all Asia and the countries bordering the shores of the Mediterranean are destined to rise in relative importance and sway. English influence and law are directing the resources of the populous countries of the Indies to industry, commerce, and the arts. The press and commerce are overcoming the arrogance and restrictions that prevented China, with her millions of people, from exerting her relative influence among the nations of the world. Egypt and Syria, under a sovereign Pacha, are contending with Turkey for the mastery in war, commerce, and the arts. France has a footing on the African shores of the Mediterranean; Russia is extending her southern territory, and increasing her commerce and navy in the waters of the Black Sea. In addition to all this, the blighting power of Mohammedan superstition is giving way to the benign influence of Christianity. These circumstances and changes are directing the commercial world to the importance of connecting the waters of the Indian Ocean with those of the Mediterranean, or of increasing the facilities of communication between them. Two plans or routes present themselves. On this subject we make an extract.

"This branch of trade suffered when the Mocha coffee was supplanted in the markets of European Turkey, Asia Minor, and Sy-

ria, by that produced in the East and West Indies; but there is little doubt that it will revive under the auspices of Mohammed Ali, who may be said to command the entire commerce of the Arabian Gulf, now that he has become the independent sovereign of Egypt and Syria. With this view he has already proposed to augment his navy; to construct a canal from Suez to the Nile; to establish regular marts on the Mediterranean coast; and open a communication between the Orontes and the Euphrates. Should these mighty projects be carried into effect, a few years may behold a total revolution in the mercantile intercourse between the nations of the east and the west. The annual exports of coffee at present, from Jidda, Mocha, Hodeida, and other contiguous ports, is estimated at 12,000 tons. The duties on the best are 100 per cent., and fully 150 per cent. on the inferior sorts. Independently of coffee, the export trade of Mocha is very considerable in gum arabic, myrrh, and frankincense. Muscat carries on a valuable trade with India and the Persian Gulf. Its inhabitants are reputed excellent seamen.

"There is one circumstance connected with the commerce of Arabia that deserves notice, from the attention which it has recently excited in this country: we mean the communication with India by steam conveyance. Two routes have been proposed, both of which are practicable, but attended with obstacles that it may be difficult to overcome. One of these is by the Persian Gulf along the Euphrates to Bir or Beles, and thence across the desert to the Mediterranean at Scanderoon, or the mouth of the Orontes, a distance of sixty-seven miles. Captain Chesney, who surveyed that celebrated river, considered it navigable for steamers as high as Bir; and that a constant supply of fuel might be found in the wood, charcoal, bitumen, and naphtha, of which abundance is to be had throughout the whole line. The distance and time necessary to accomplish this route he estimates thus:

	Miles.	Days.
From Falmouth to Malta,	2300	15
— Malta to Scanderoon,	800	4
— Scanderoon to Bussora,	1349	12
— Bussora to Bombay,	1587	8
Necessary or incidental delays,		3½
	6036	42½

"The other route is by the Red Sea, the advantages and practicability of which have been advocated by Captain Head. The only physical point on which there seems to be any doubt or difference of opinion, is the overland, conveyance between Egypt and the Arabian Gulf. Suez and Cosseir are certainly the most favorable ports; but the former has the disadvantage of shallow water, while the other would occasion a delay of ten or twelve days in ascending the Nile to Keneh, and crossing the intervening desert. The following is the calculation as to time and distance by this line of conveyance:

	Miles.	Days.
From Falmouth to Malta,	2040	16
— Malta to Alexandria,	860	5
— Alexandria to Suez (by Cairo),	175	6
— Suez to Bab el Mandeb,	1200	7
— Bab el Mandeb to Socotra,	600	4
— Socotra to Bombay,	1200	7
	6075	45

"The most formidable impediment in the way of this project is the article of expense, which has been estimated at 40 or £50,000 per annum, if the communication is made monthly. But, though in abeyance in the mean time, it is highly probable that the plan will be carried into effect.* The changes at present contemplated in the government and policy of India will render it of vast importance to establish a shorter and cheaper line of intercourse than by the Cape of Good Hope; and perhaps the period is not very remote when the commerce of the east will resume its ancient channel, and the great trading capitals of Europe and Asia be brought, by the marvellous agency of steam, within a few days' journey of each other."

The history of Arabia, says our author, naturally divides itself into three periods, the ancient, the military, and the modern. The first carries us down to the age of Mohammed, and is called by the Arabs the times of ignorance. The second includes the wars of the Saracens, and the empire of the Caliphs. The third embraces the events from the fall of the Caliphate to the present day. The first we shall pass over, and make but a very few extracts on the others.

"Neither the simplicity of his creed, nor the terror of the sword, nor the exhortations of the pulpit, could establish that unanimity of sentiment which Mohammed professed so ardently to desire. The spirit of division which appeared among his followers even before his death, broke out with greater violence under his successors. The Mussulman sects have been far more numerous and violent than those of Christianity; and the history of the mosque presents as melancholy a view of the weakness of the human heart, and the pride of the human intellect, as is afforded by the annals of the church. Volumes might be filled with their names and their tenets. The same knotty points in scholastic theology that puzzled the divines of Christendom—the essence and attributes of God—the justice of predestination, and its compatibility with freedom of will—the province of reason in matters of faith—and a number of casuistical questions on the moral beauty or turpitude of actions—have been themes of bitter and implacable controversy among the doctors of Islam."

"The spirit of hostility between most of these, especially the Sonnees and Sheahs, is rancorous and irreconcilable. Names which are never mentioned but with blessings by the one are hourly cursed by the other. No wars, as has been justly remarked, that ever desolated the Christian world, have caused half the bloodshed and misery, or been so deeply stamped with the character of implacable animosity, as have arisen from the political and religious controversies of the Mohammedan sectaries."

The following extract may serve as a specimen of the slaughtering battles in propagating the Mohammedan or Saracen creed and power.

"In all the emergencies of war the superior genius of Khaled marked him out for the post of honor; and whoever might be the choice of the prince, he was, both in fact and fame, the foremost leader of the Saracens. From Irak he was recalled to Syria, and his arrival altered the aspect of the campaign. Aracca, Tadmor, and Hauran, had submitted; but a rash attempt on Bosra had nearly turned the tide of conquest. Serjabil had been despatched by Obeidah with a body of 4,000 cavalry, and was repulsed from its gates with loss. Khaled, with 1500 horse, came in time to rally the flying detachment, and saved the believers from the disgrace of a total overthrow. 'See, the villains come!' he exclaimed, as the opened gates of the fortress poured forth their martial array into the plain; 'they know we are weary; but let us go on, and the blessing of God go with us.' The battle grew hot; shouts of Allah akbar! Alhamlah, alhamlah! Aljannah, aljannah! (God is great! Fight, fight! Paradise, paradise!) inflamed the enthusiasm of the Saracens, and threw the ranks of the Christians into disorder. With the loss of 230 men the Arabs remained masters of the field, and the remnant of the enemy fled to their fortress. The capture of the city was accelerated by the duplicity of Romanus, the governor, who, to secure his wealth, or save his life, turned both traitor and Mussulman. The conquest of Bosra opened a way for the siege of Damascus. The Grecian emperor was at this time at Antioch, and alarmed at the devastations of the Saracens, he sent five thousand men to the defence of the place.

"Amid the groves and fountains of this celebrated capital, 'the hungry Arabs' for the first time pitched their camp. In rude and superstitious ages, a hostile defiance was frequently sent and accepted by the generals themselves, as an omen of future fortune. The personal valor of Khaled was twice displayed in single combat before the two armies, and both the Christian leaders in succession, Azrael and Calous, became his prisoners. Several actions more or less sanguinary were fought, but the Damascenes finding that every sally only exposed them to fresh losses, resolved to reduce their city to a closer defence. Six weeks of distress compelled them to offer the Moslem leader one thousand ounces of gold and two hundred silken robes, on condition of his raising the siege; but Khaled was inexorable, and would listen to no terms but annual tribute or the Koran. They had contrived to drop a messenger from the ramparts, who found his way to Antioch, whence the emperor despatched to their relief one hundred thousand men, with Werdan at their head. The tumultuous joy of the besieged at the prospect of this seasonable succor, revealed the secret to the vigilant enemy; the reinforcement was intercepted, and defeated by a detachment under Derar, who took with his own hand the standard of the Christians, bearing the sign of the cross, and richly adorned with precious stones.

"A new levy of seventy thousand men, under Werdan, was again assembled in the neighborhood. These formidable preparations required the junction of the Saracens, who were dispersed on the frontiers of Syria and Palestine. Yezid was at Belka, Nooman at Tadmor, and Amru had not left Irak. In a circular to the latter, Khaled urged him to join his brethren without delay in their march against the infidel Greeks, 'who proposed to extinguish the light of God with their mouths.' The other generals had

* Captain Head estimates that a monthly voyage would leave balance of no less than £52,486 of annual profits.

similar orders, and by a singular coincidence in time, the whole force met on the plain of Aiznadin on the same day (A. H. 11, or the 13th of July, 633), a circumstance which they piously ascribe to the blessing of Providence. On retiring from Damascus, Khaled led the van, in compliance with the wishes of Obeidah, though he offered to take the more perilous station of the rear-guard. The event proved the disinterestedness of his bravery, and the soundness of his judgment, for the besieged, seeing the enemy depart, ventured out with six thousand horse and ten thousand foot, and overtaking Obeidah defeated him and carried off a great part of the baggage, with the women and children. The presence of Khaled put a stop to the rout, and of the Christian army only one hundred horsemen returned to Damascus. The captives were retaken: among them was the beautiful Khaulah, sister of Derar, and a troupe of heroines from Yemen, who were accustomed to ride on horseback and fight like the Amazons of old. The intrepidity of Khaulah saved the honor of the martial sisterhood. They were disarmed of their swords and bows, but with their tent poles they kept their infidel ravishers at bay till relieved by their own friends.

"Forty-five thousand Moslems mustered on the field of Aiznadin. The troops of Werdan consisted chiefly of cavalry, and have, by historians, been called indifferently —Syrians, from the place of their birth—Greeks, from the religion and language of their emperor—and Romans, from the proud appellation still claimed by the successors of Constantine. The armies were in sight of each other, and encouraged to their duty by their respective generals. Khaled put it to the conscience of his Moslems 'to fight in good earnest for religion, or turn their backs and be damned.' To the squadron of ladies, Khaulah, Opheirah, and others, whose names the annalists have ungallantly omitted to record, he addressed himself, 'Noble girls! be assured that what you do is very acceptable to God and his apostle. You will hereby purchase a lasting memorial, and the gates of paradise will be open to you.'

"Werdan represented to his troops the shame of slavery, and exhorted them to implore heaven for succor. To his sudden surprize he was approached by a fierce and half-naked warrior, whom he imagined to be a spy, and sent a party of thirty horse to seize him. It was the intrepid and adventurous Derar, who had undertaken to view the state of the enemy. In his retreat he maintained a successful skirmish against the whole party, and, after killing or unhorsing seventeen of their number, reached his companions in safety. On the eve of battle, a grave elder from the Christian army offered to purchase peace by the gift, to each Saracen soldier, of a turban, a robe, and a piece of gold; ten robes, and one hundred pieces, to their leader; one hundred robes and one thousand pieces to the caliph. 'Ye Christian dogs!' replied the indignant Khaled, 'you know your option—the Koran, the tribute, or the sword. As for your proffer of vests, turbans, and money, we shall in a short time be masters of them all.'

"The onset on both sides was sustained with vigor, and the battle, or rather the slaughter, continued till evening. Fifty thousand of the Christians fell under the scimitars of the enemy, and the remains of the imperial troops fled—some to Cæsarea, others to Damascus or Antioch."

The next extract describes a still more bloody battle between Manuel, the general of Heraclius, the Grecian emperor, and Khaled, the Mohammedan leader.

"Both sides were prepared for action. Manuel disposed of his multitudinous legions into several divisions, each consisting of twenty thousand men. Mounted on a black charger, and clad in gorgeous armor, he conducted the movements of the centre in person. The van of the Moslems was led on by Khaled, restored once more to the supreme command; while his colleague, with the yellow flag under which Mohammed had fought at Khaibar, was posted in the rear, that the flight of the believers might be checked by the presence of this consecrated ensign. Khaulah and her band of Amazons were stationed in the same line, and for the same reason. The exhortation of Khaled was of tremendous brevity: 'Paradise is before you; the devil and hell-fire behind!' Their march to the field was in profound and awful silence; but the ranks of the Christians presented a different scene. The mingled noise occasioned by the priests chanting their gospels, and the motions of their beads and chaplets, is compared to the roll of distant thunder; while the glittering of their armor resembled flashes of lightning.

"Their first effort was directed against the centre of the Arabs, which, by a violent assault, they endeavored to penetrate; but the whole of the division was annihilated by Khaled with a body of ten thousand horse. Another, and an equally unsuccessful attempt, was made; yet such was the weight of the Roman cavalry, that the right wing of the Saracens was broken and separated from the main body. Thrice did they retreat in confusion, and thrice were they driven back to the charge by the blows and reproaches of the women, whose tent-poles were more effective than the terrors of everlasting punishment. The battle raged for several days, and night separated the combatants only to renew the encounter. In the intervals of action many a lance was shivered in single prowess; and such was the cunning and skill of the Armenian archers, that, in one day, the Day of Blinding, seven hundred of the Moslems lost one or both of their eyes—a deformity which, instead of considering a misfortune, they gloried in as a mark of Divine favor.

"The carnage at Yermouk surpassed that of any preceding battle: the veterans of former wars confessed it to be one of the most desperate and doubtful encounters they had ever seen; but it was decisive. Seventy thousand of the best troops of Heraclius, with their general, and a vast number of his principal officers, were left on the field. Of the fugitives who attempted to escape, many perished during the confusion of the night in the woods and ravines, or in the precipitous watercourses that intersect the adjoining mountains. Besides those that were slaughtered after the defeat, many found a watery grave in the Yermouk, which in their panic they had endeavored to cross. Altogether the Christians are stated to have lost one hundred and fifty thousand men in killed, and forty-eight thousand in prisoners. Perhaps the Arabs may exaggerate in point of numbers, but the Greek historians themselves have admitted the total overthrow of the Roman power in Syria in this sanguinary engagement (Nov. 636), which they long after bewailed as a just retribution for their sins."

Our next extract ends the career of the Caliphs of Bagdad, by the hand of Hoolaku, the general of the Mogul army.

"On Friday, the ninth of Saphar, (Feb. 14, A. D. 1258,) Hoolaku made his entry into Bagdad, where he treated his generals and principal officers to a sumptuous entertainment. To this display of barbarous festivity and triumph the last of the Abbassides was now summoned, and required, as the host of his conqueror, to produce something that should be worthy the acceptance of such an exalted guest. Conceiving that nothing more was intended than expressed, the unhappy monarch gave direction that a present of two thousand costly and magnificent robes, two thousand dinars of gold (£925), together with a variety of gold and silver plate, vases, and other articles, enriched with jewels of the greatest price and beauty, should be selected from his treasury and wardrobe, and laid in the usual style in trays, before Hoolaku. Surveying them with an eye of contempt, the proud Mogul distributed every article among his attendants. 'The whole of thy visible property,' addressing Mostasem, 'as well as that of the inhabitants of Bagdad, is already at the disposal of my followers. Of that it was needless to make an offering. What we require of thee is to give us some indication with respect to thy hidden treasures.' The object of the barbarian could no longer be misunderstood. The captive prince pointed in silence to the area in the court of his palace; and on opening the ground there was discovered what might have been amply sufficient to glut the utmost cravings of avarice—a tank, or covered reservoir, loaded to the brim with ingots of solid gold, each weighing one hundred meskals, or nearly a pound and a quarter avoirdupois. This immense wealth did not satiate the vengeance of the remorseless Hoolaku, who is said to have kept his illustrious but unfortunate prisoner several days without foot or sustenance of any kind. When the pangs of hunger could no longer be endured, the wretched Mostasem sent to implore relief; but the tyrant, in mockery of his distress, ordered his attendants to set before him a dish full of gold and jewels. The last act of the tragedy approached, and it became a subject of deliberation how the sacred person of the caliph should be disposed of, as it was superstitiously believed that the shedding of his blood would be followed by some awful and tremendous convulsion of nature. To quiet these uneasy apprehensions, the ferocious Tartar resolved that he should be sewed up in a leathern bag; others say wrapt tightly in felt, or coarse hair blankets, and in this manner dragged through the streets of the city until he expired; every joint and bone of his frame being pounded as in a mortar. The rest of his children, his brothers, his relations, his household officers, and every agent of his government, were cut off with the same unsparing cruelty. The devoted city was now surrendered to the licence of the Mogul army, and for the space of forty days such a scene of pillage, massacre, and blood

ensued, as outraged humanity, and almost surpassed the bounds of belief. The Persian authors assure us, that in the city alone the number of the slain amounted to eight hundred thousand persons, exclusive of the multitudes that were butchered in the adjoining villages. If this estimate be correct, we may believe that the waters of the Tigris were reddened, and its usual dimensions swelled, with the tributary streams of human gore. This memorable revolution terminated the dynasty of the Abbassides, after it had subsisted for a period of 523 lunar years. The regal authority of this celebrated race, and the greater part of their remaining dominions, now devolved on the Mogul princes of the blood of Zingis. Since that event Bagdad has witnessed various other sieges and revolutions. It was burnt and plundered by the ferocious Timur (A. D. 1401), who erected a pyramid of human heads on its ruins. In 1637 it incurred the vengeance of Amurath IV., the Turkish sultan: three hundred thousand troops encamped under its walls, and by the incessant play of two hundred pieces of artillery its towers and ramparts were levelled with the ground. The vaults and cellars were filled with the dead bodies of those who had fled to these recesses for security. The sobs and cries of fifteen thousand women and children were drowned by the shouts of the enemy exulting over the fallen Queen of the East; and the trembling remnant is said to have owed their preservation to the music of Shah Kali, whose touching strains are alleged to have melted Amurath to tears of compassion. Since that period the once illustrious city of the Abbassides has been degraded to the seat of a Turkish pashalic. In the present century it can number two hundred thousand inhabitants. The rich merchants and the beautiful princesses of the Arabian Tales have all disappeared; but it retains the tomb of the charming Zobeide, and can boast of its numerous gardens and its well stocked bazaars."

We shall now turn the attention of our readers from such painful and bloody scenes to those of a more tranquil and rural nature—subjects that should always be, not only acceptable, but pleasing, to those who hold the plough and use the spade. Our extracts will be promiscuous and miscellaneous; and we hope, both interesting and useful to our readers.

Fruits.—At Sanaa, the south-western part of Arabia, "fruits are abundant. It is said there are more than twenty different species of grapes, one of which is without stones; and as they do not all ripen at the same time, they continue to afford a delicious refreshment for several months. By preserving and hanging them in their cellars, the citizens secure an agreeable food the greater part of the year. Vast quantities of them are dried; and the exportation of raisins forms a considerable branch of traffic. The adjacent plain of Rodda is covered with gardens, and watered by small streams. Timber for fire-wood is scarce and dear, the hills in the vicinity being bleak and bare; so that this article is brought from the distance of three days' journey, and a camel's load costs two crowns. There is a partial supply of pit coal, and even peat is used, but of so bad a quality as to require a mixture of straw to make it burn."

[*To be continued.*]

NEW-YORK FARMER.

JUNE 1, 1834.

Industry procures wealth, reputation, and happiness; labor is more congenial to health of body and mind, than inactivity.

The Season.—In our March number we put our readers on their guard in respect to the fickleness of that month. We did, we confess, injustice to that first portion of opening spring; and now make our apology, and cast the opprobrium on blooming May, who has usually employed her whole period of existence in strewing flowers and beautifying the face of nature.

To the 16th of the month, fires in sitting rooms were requisite almost every day. On the 12th and 13th the cold was severe, producing both frost and ice. On the 15th, a snow storm appears to have extended over the northern and western parts of the State. In some places it was to the depth of ten inches. Beans, corn, and other tender vegetables, have been destroyed. The leaves of almost every kind of tree and shrub show the effects of the frost. In some instances they have entirely fallen off Peaches have been very much injured, but not entirely destroyed. A very considerable portion of the apple crop will probably escape. Gooseberries and currants appear to be very little injured. We have an apricot tree standing against the western side of a building, which is loaded with fruit, and scarcely showing any effects of the frost in its foliage, while other trees, willows for instance, standing not fifty feet from it, in open exposure, are comparatively stript of their foliage.

Since the 24th the weather has been very fine, both warm and showery. The prospect for grass is fine; and also for corn not planted early.

The Albany Argus, of the 16th of May, says, "For the three last days, it has been unusually severe, and it is to be feared, will materially affect, if not destroy vegetation, which was before in an uncommonly advanced state, for the season. Fires have been as much needed for several days as in mid-winter, and the fields in the neighborhood are covered with snow. There were slight sprinklings of snow occasionally on Tuesday. On Wednesday night there was a heavy fall of rain and snow, which towards midnight congealed as it fell, and at six o'clock yesterday morning, (the time at which the greatest degree of cold was experienced,) left the trees, many of which were in blossom, and the herbage, covered with a coat of snow and ice. Ice had formed also yesterday morning to the thickness of an eighth of an inch. About noon there was a very sensible mitigation of the severity of the cold.

"The following are memoranda of the range of the thermometer kept at the Albany Academy in a fair exposure. It will be seen that yesterday morning the mercury was down to 28; and that for three days it has ranged between 28 and 54:

	6 A. M.	3 P. M.	9 P. M.
13th,	36	42	36
14th,	36	54	36
15th,	28	42	—."

The Reading (Pa.) Chronicle says: "The crops of grain in this section of the country were never more promising. The rye is mostly in head. The present cold spell, it is presumed, will not materially affect their growth, so that the prospects of the husbandman are those of an abundance."

Huntsville, Ala., May 1.

Great Damage by Frost.—The damage sustained by the frost on Sunday night, has, perhaps, never been greater in this section of the country, so late in the season. For some weeks past the weather had been mild, just such as the planter could desire, and the stand of cotton was exceedingly fine; but the flattering prospect has been sadly reversed. Saturday night was attended with some frost—the weather was cold throughout Sunday, the wind from the north, and a killing frost was the consequence at night. We fear the injury has been general throughout North Alabama, if not the whole cotton growing country. In our immediate vicinity, we hear of some planters who have lost whole fields, others one-half, &c. Many will be unable to replant for the want of seed, which it will be impossible to procure at this late season.

The Genesee Farmer of the 17th says: "The mercury during the 13th did not rise much above 40 degrees, wind north and excessively chilly; and on the morning of the 14th, the sky serene as in autumn, with a west wind; thermometer at 10 A. M. 50 degrees, barometer 29.40, there were no very fearful forebodings of inauspicious seasons. Gardeners were all in requisition, and busily engaged in depositing seed up to the very time the storm commenced, which was about 12 o'clock, and from the north-east, with a strong wind.

"Snow fell very fast during the most of the afternoon, and measured in many places 4 inches. The trees, with foliage half developed, were entirely shrouded, and the gloom that every where pervaded was inexpressible. At 10 o'clock in the evening the temperature was 6 degrees below the freezing point, the snowing had ceased, and the great work of destruction by frost was vigorously progressing.

"In one garden, among thirty varieties of grapes, as well native as foreign, not a bud unscathed could be found. Apricots, peaches, plums, cherries, nectarines, and pears, are indiscriminately and entirely blighted, even on wall trees. Of apples we cannot speak definitely, but a gentleman from Ontario county thinks them greatly injured, if not all destroyed. Apricots had attained the size of full grown cherries, and now hang on wilted stems, evidently past the blue stage. Currants and gooseberries, which are exceedingly patient of frost, have paid respectful deference to this appalling visitation, and their pendulous racemes, as though in full bearing perfection, denote evidently a yielding to the force of circumstances.

"Frost and snow in May is not very unusual, and the disastrous consequences this season must be attributed to the forward state of vegetation at the time it occurred, and the severity in this case, which we believe to be greater than has been known for many years."

Clover for Hogs.—Although the improved breeds of hogs will thrive in clover fields, ye the same grass cut and thrown into their pens will scarcely sustain them. Pasturing swine on grass lands enriches the soil more than other animals. The hogs should have plenty of water, and the fresher and purer the better. A mud hole is better than none. A hog pasture and an orchard should be one and the same field.

To temper Large Instruments.—W. H. Raiford, in the Southern Planter, says, some wrought iron ploughs will last twice as long as others. This is owing, in a great measure, to the tempering. It is in vain, he says, to attempt to temper large instruments, in a small quantity of impure water. The more and the purer the water the better will be the temper.

THE LOCUST.—The locust belongs to that class of insects which naturalists distinguish by the name of *gryllus*. The common grasshopper is of this genus, and in its general appearance resembles the "migratory locust," of which we have to speak. The body of this insect is long in proportion to its size, and is defended on the back by a strong corslet, either of a greenish or light brown hue. The head, which is vertical, is very large, and furnished with two antennæ of about an inch in length: the eyes are very prominent, dark, and rolling: the jaws are strong, and terminate in three incisive teeth, the sharp points of which traverse each other like scissors. The insect is furnished with four wings, of which the exterior pair, which are properly cases to the true wings, are tough, straight, and larger than those which they cover, which are pliant, reticulated, nearly transparent, and fold up in the manner of a fan. The four anterior legs are of middling size, and of great use in climbing and feeding; but the posterior pair are much larger and longer, and of such strength that the locust is enabled by their means to leap more than two hundred times the length of its own body, which is usually from two to three inches. Locusts, as the writer of this article has seen them in the East, are generally of a light brown or stone color, with dusky spots on the corslet and wing-cases; the mouth and inside of the thighs tinctured with blue, and the wings with green, blue, or red. These wings are of a delicate and beautiful texture; and in the fine fibres, by which the transparency is traversed, the Moslems of western Asia fancy that they can decypher an Arabic sentence, which signifies "We are the destroying army of God."

The female locust lays about forty eggs, which in appearance are not unlike oat-grains, but smaller. She covers them with a viscid matter, by which they are sometimes attached to blades of grass, but are more usually deposited in the ground. For this purpose she prefers light sandy earths, and will not leave the eggs in compact, moist, or cultivated grounds, unless she has been brought down on them by rain, wind or fatigue, and rendered incapable of seeking a more eligible situation. Having performed this, the female dies; and the eggs remain in the ground throughout the winter. If much rain occurs, the wet spoils them, by destroying the viscid matter in which they are enveloped, and which is essential to their preservation. Heat also seems necessary to their production, for the little worm which proceeds from the egg sometimes appears so early as February and sometimes not until May, according to the state of the season. This, in the usual course, becomes a nymph, in which state it attains its full growth in about twenty-four days. After having for a few days abstained from food, it then bursts its skin, comes forth a perfect animal, and immediately begins to unfold and trim its wings with the hinder feet. The insects which first attain this state do not immediately fly off, but wait in the neighborhood for those whose developement is more tardy; but when their army is formed, they take their flight from the district.

To those who have not seen a flight of locusts, it is difficult by description to convey an idea of the appearance it presents. As seen approaching in the distance it resembles a vast opaque cloud, and as it advances a clattering noise is heard, which is occasioned by the agitation and concussion of wings in their close phalanxes. When they arrive they fill the air, like flakes of thick falling snow; and we have known the bright and clear sky of Chaldea become darker than that of London on some heavy November day.

Wherever they alight, every vegetable substance disappears with inconceivable rapidity before them. The most beautiful and highly cultivated lands assume the appearance of a desert, and the trees stand stripped of all their leaves as in the midst of winter. After devouring the fruits, the herbage, and the leaves of trees, they attack the buds and the bark, and do not even spare the thatch of the houses. The most poisonous, caustic, or bitter plants, as well as the juicy and nutritive, are equally consumed; and thus "the land is as the Garden of Eden before them, and behind them a desolate wilderness." It seems as if nothing could appease their devouring hunger, and the energy and activity they exhibit, and the rapidity of their operations, almost exceed belief. Their depredations are not confined to the open air; they scale the walls, and penetrate to the granaries and houses. They swarm from the cellar to the garret, and, within doors and without, they are a terrible nuisance, for they are continually springing about, and often, in consequence, give a person startling raps on different parts of the face, affording very sensible evidence of the force with which they leap; and, as the mouth cannot be opened without the danger of receiving a locust, it is impossible to converse or eat with comfort. When they have settled themselves at night, the ground is covered with them to a vast extent; and, in some situations, they lie one above another several inches thick. In travelling, they are crushed beneath the feet of the horses; and the animals are so terribly annoyed by the bouncing against them in all directions of the insects they have disturbed, that they snort with alarm, and become unwilling to proceed.

It is not merely the living presence of these insects which is terrible, but new calamities are occasioned by their death, when the decomposition of their bodies fills the air with pestilential miasma, occasioning epidemic maladies, the ravages of which are compared to those of the plague. Thus famine and death follow in their train; and instances are not of rare occurrence in the East in which villages and whole districts have been depopulated by them.

Under these circumstances it necessarily becomes an object of anxious attention, in the countries they are most accustomed to visit, either to prevent them from alighting on the cultivated grounds, or to drive them off or destroy them after they have descended.

The impression is very general that noise frightens these insect devastators, and prevents them from alighting. When, therefore, the people are aware of the approach of their armies, every kettle or other noisy instrument in the place is in requisition, with which, and by shouts and screeches, men, women, and children, unite in the endeavor to make the most horrible din in their power. The scene would be truly laughable, from the earnestness which every one exhibits in this strange employment, were not all disposition to mirth checked by the consciousness of the fearful consequences of the invasion which it is thus endeavored to avert.

How far noise may really operate in preventing their descent in ordinary circumstances, it is not easy to ascertain; but on the approach of evening, or when exhausted by their journey, nothing can prevent them from alighting. They will then descend even on the seas and rivers, of which some striking instances are recorded.

When a swarm has actually alighted, the means employed to drive them off are much the same as those to prevent their descent. But this is never attempted in wet weather, or until the sun has absorbed the dew, as the locust is quite incapable of flying while its wings are wet. When the swarm is large, or when it has come down on cultivated grounds, no measure of destruction is practicable without sacrificing the produce; but when the depredators have been driven to waste grounds, or happened in the first instance to descend upon them, various modes of extirpation are resorted to, of which the following is most effective: a large trench is dug from three to four feet wide, and about the same depth; the off side is lined with people furnished with sticks and brooms, while others form a semi-circle, which encloses the extremities of the trench, and the troop of locusts, which are then driven into the grave intended for them by the clamorous noises we have already described. The party stationed on the other side push back such insects as attempt to escape at the edges, crush them with their sticks and brooms, and throw in the earth upon them.

These insect devastators have fortunately a great number of enemies. Birds, lizards, hogs, foxes, and even frogs, devour a great number; and a high wind, a cold rain, or a tempest, destroys millions of them. In the East they are used as an article of food. In some parts they are dried and pounded, and a sort of bread is made, which is of much utility in bad harvests. They are sold as common eatables in the bazaar of Bagdad, and the cooks of the East have various ways of preparing them for use.—[Penny Magazine.]

MATERIALS FOR PAPER.—By a series of experiments I have ascertained that *paper*, of an excellent quality, can be prepared not only from the husks of Indian corn, but also from a pulp made from various kinds of wood and bark, particularly from the bark of several kinds of poplar, and from the wood of birch and some other trees. In conducting my experiments, my plan has been first to select the vegetable matter; then, if it required whitening, to bleach it in chlorine gas, and afterwards to reduce it to a fine pulp, by pounding, and filing in water. When properly prepared, I would place a small portion of the pulp between polished steel plates, slightly warmed, and strongly compress them by screw power; the degree of consistency and polish assumed by the pulp, under such compression, would indicate the quality of paper capable of being prepared from the vegetable matter used. I trust that the time will soon arrive, when rags will not be considered as indispensable in the manufacture of paper, and will be, when economy or convenience requires it, superseded by different kinds of vegetable substances, which are so cheaply, bountifully, and universally furnished by nature.

TO MAKE SEEDS VEGETATE.—Small seeds, and others that will not readily vegetate, should, after being sown, be covered with boards. This will prevent the weeds from growing, until the seeds have started.

Cultivation of Woad.—At page 90, vol. ii. is an excellent and full report on this subject by a committee of the Hamilton county Agricultural Society of Ohio. This article is used extensively in dying. Mr. J. Atherstans, of Philadelphia, raised in the vicinity of Cincinnati 3,360 pounds per acre, which he sold at 11 cents per pound. It is sown very early in the spring, and transplanted into rows.

The Mulberry—American Institute.—Among the public associations that laudably made exertions to introduce the culture of this plant, preparatory to the manufacture of silk, was the American Institute of this city.

Indian Rubber useful in Pruning.—It has been recommended to tie a piece of Indian rubber on vines to prevent them from bleeding. We should suppose Indian rubber cloth would serve well to wind about grafts.

Harlem Railroad.—One of the most interesting rides which both citizens and strangers can take in this city, is that on this railroad. For 12½ cents a ride of five miles to Yorkville is obtained. It is true that the route affords no beautiful view of cultivated fields and gardens, but conveys an idea of the great amount of labor bestowed in cutting the track through hills of solid rock from 20 to 60 feet high, affording a correct idea of the geological structure of the island. At the termination of the ride is a spacious hotel, on very elevated ground, affording one of the most extensive, varied and richest prospects to be seen in our country.

Steam Carriages.—The select committee appointed last session of parliament, on the motion of Colonel Torrens, conclude their report with the following summary of the result of their inquiries:—1. That carriages can be propelled by steam on common roads, at an average rate of ten miles per hour. 2. That at this rate they have conveyed upwards of fourteen passengers. 3. That their weight, including engine, fuel, water and attendants, may be under three tons. 4. That they can ascend and descend hills of considerable inclination with facility and ease. 5. That they are perfectly safe for passengers. 6. That they are not (or need not be, if properly constructed,) nuisances to the public. 7. That they will become a speedier and cheaper mode of conveyance than carriages drawn by horses. 8. That as they admit of greater breadth of tire than other carriages, and as the roads are not acted on so injuriously as by the feet of horses in common draught, such carriages will cause less wear of roads than coaches drawn by horses. 9. That rates of toll have been imposed on steam-carriages which would prohibit their being used on several lines of road, were such charges permitted to remain unaltered.—[New Monthly Magazine.]

Preservation of Skins.—J. Stegard, tanner at Tyman, in Hungary, completely preserves raw hides from putrefaction, and restores those that are tainted, by applying to them, with a brush, a layer of pyroligneous acid. They absorb it very speedily, and it occasions no injury nor diminution of their value.—[Receuil Industrielle.]

Scotch Method of preserving Eggs.—Dip them during one or two minutes in boiling water. The white of the egg then forms a kind of membrane, which envelopes the interior and defends it from the air. This method is preferable to the varnish proposed by Reaumur.

Cultivation of Garden Seeds.—Without great care in raising seeds, many kinds of garden plants will deteriorate or become of mixed varieties. It is not only necessary to make an early selection of the very best plants for seed, but those growing under all the circumstances likely to produce the desirable properties. If planted near each other, particularly if they flower at the same time, they are sure to mix, and, in nine instances out of ten, produce inferior plants. Among the vegetables liable to hybridise are the brassica family, including cauliflowers, broccoli, cabbage, turnips, &c., and different kinds of peas, beans, cucumbers, beets, onions, lettuce, and corn. The latter, in particular, will, by the aid of strong winds, mix at a great distance Those who grow seed for sale cannot be too careful.

Chinese Mulberry.—*Morus Multicaulis.*—The high encomiums which have been passed upon the Chinese Mulberry, by many of the nursery men in this country, within a few years past, induces us to notice it, for several reasons.

First, It has already been satisfactorily ascertained, that our climate and soil are favorable to the growth of the white Italian Mulberry, and the rearing of worms for the production of silk; and that the business can be followed with a profit, corresponding to other agricultural and manufacturing pursuits in this country, with our present knowledge of it. This being admitted, it is important that before we leave this certainty for an uncertainty, we should ascertain,—Secondly, Whether the Chinese Mulberry will succeed with us as well as the white Italian, and if so, whether it is any better for feeding silk worms.

With regard to its capability of enduring our climate, we have only to add, that a friend of ours a few days since informed us that all his Chinese Mulberries were killed to the ground, notwithstanding our winter has been uncommonly mild, more so perhaps than has been known for the last ten years.

We have examined ours, and find them killed also, which induces us to believe that they will not withstand our winters without more or less injury; and, allowing that they should send up many sprouts from the roots, as their name indicates, it is doubtful whether the leaves from them will be found preferable for feeding worms, to those of the common White Mulberry, since their greatest recommendation was their size, which now is not considered so important, as it is found to be the better way, to cut off small limbs and place upon the table, than to separate the leaves from the branches.

Remarks.—The above is from Goodsell's Genesee Farmer, at Rochester. We have heard of no one in this part of the State having lost a single plant of the Chinese Mulberry; but, on the contrary, have seen many not in the least affected by the winter, even those that had grown the last season five or six feet from layers. We have raised them on highly manured and on poor ground. Those on the former were slightly injured in the extremities of the branches, but on the latter not at all. The White Italian Mulberry raised from seed on the above grounds showed much greater injury from the winter.

Vegetable Silk.—There is at present considerable activity in a new branch of industry at Paris. We allude to the manufacture of carpets, and various other articles of general use, from a substance first imported into France by M. Pavy, to which he has given the name of vegetable silk. This substance has, in fact, an appearance very similar to that of silk, and can be employed as its substitute in a variety of cases. It is white, and can receive dye of any color. This vegetable is gathered in shoots of from 15 to 20 feet in length, and is of such strength that four of its shoots plaited together will bear a weight of 40 pounds.—[Balt. Gaz.]

Washing and Shearing Sheep.—When we wash sheep in warm weather to cleanse their wool it does not injure them, but if cold, it does, and sometimes introduces the rot.

Washing common sheep's wool on their backs is the best method to prepare it for carding, that I have observed, if it is well done; and the best way to do this is to put the sheep in clean running water (to the number of 50 or 60) before we commence washing; this soaks, and dissolves the dirt in the wool, so that even merino wool is made much cleaner. (This we discovered by a merino sheep jumping out of a boat and going to shore, and when we washed it, the wool that had been wet was considerably cleaner.) Then carefully wash them the common way.

Wool is much better, when shorn early, both for carding and wearing.

I have shorn my sheep from the 1st of 5th mo. (May,) to the 6th mo., (June,) and by several years' experience in carding wool, have found that the earlier wool is shorn the better it works in carding, even merino as well as common wool; because it is more elastic, and softer: but when wool is shorn late in the season, it becomes dead and harsh, and is subject, when carded, to nap: so that early shearing, keeping sheep in good order, and washing wool suitably, are material objects.

According to my observation, about the latter end of April and the first week in May is mostly warm dry weather; that if sheep were shorn about this time, their wool would card, and wear much better than when shorn late; and they do as well with me as when their wool was taken off late, having a suitable shelter.

The best method that I have observed of washing common wool after shearing is to put 8 or 10 lbs. in a tub of cold, soft water; let it soak 30 or 40 minutes, then rub it slightly and rinse it out; fill the tub with fresh wool as before, in the same water, and when thus done, rinse it in clean water, and shake it out loose for drying. Warm water takes the grease too clean out of common wool for carding; and it makes it harsh, and is more or less subject to be fulled; soaking the wool dissolves the dirt, and this is all we want out of common wool; to rub it slightly, for wool may be fulled by rubbing it much, and wool should not be fulled, for that will cause it to nap in carding; to shake it out loose, for wool made loose and unconnected cards the best; it is best not to empty the water until done washing, because the oftener we wash in the same water the cleaner wool will be; for the grease in wool acts like soap, in cleansing it; on this account it is preferable to wash the locks first, before we wash that which is for more particular use.

Wool ought to be taken in before rain, for that injures it, by connecting, or interlocking the fibres; it also makes it harsh and compact.—[Ohio Aurora.]

Baked Potatoes.—Try it—those who are fond of baked or roasted potatoes, will be gratified by trying the following method:

Place them clean in the bottom of a bake-pan or kettle, dispensing with the cover—hang them over the fire and shovel the coals on them. It will be as quick and as cheap as any other method of cooking them; and they are not so soggy as when baked under the cover, nor burnt as they commonly are when roasted on the hearth—and the flavor will be excellent.—[Maine Farmer.]

Success of Commerce, Manufactures, and the Arts, dependent on the Prosperity of Agriculture. By HORATIO HICKOCK.

[The following article was read before the New-York State Agricultural Society, at the Anniversary in February last. Judge Hickock is a scholar and a practical farmer. It is to be regretted that he does not favor the public more frequently with the productions of his pen.—ED.]

A general disposition has prevailed in our country to bestow the highest encomiums upon the employment of the farmer, and efforts have been repeatedly made to advance his interests. These encomiums have been couched in terms so general and so complimentary as to excite favor rather than conviction; and the efforts made have scarcely outlived the first kindly feeling which declamation had raised. In order to produce that continued and persevering exertion which the accomplishment of useful objects generally require, it may be of some advantage, in treating of rural affairs, to enter a little more particularly into the claims to those high honors which have been so readily accorded to the business of husbandry.

In every civilized country, there are three general departments of industry, the agricultural, the manufacturing, and the commercial. In speaking of these classes of industry, it is common, and perhaps necessary to perspicuity, to regard agriculture as wholly occupied in and producing all the necessaries of life and of raw materials; to manufactures is assigned the employment of giving to raw materials new forms and increased value; to the merchant is accorded the business of procuring the raw materials and the other produce of the farmer, and also manufactures, and of distributing them according to the wants of community. Among a people who have attained to the highest perfection in the arts and in commerce, this classification of industry is the most distinctly observed; where the arts are less perfect, the classification is less distinct, and in the first stage of civilization, agriculture is the universal employment.

With a view to discover the relations which different employments bear to each other, it may be needful to consider a people in the first stage of civilization, where each person constructs his own buildings, raises his own food, makes his own clothing, and negociates his own exchanges; all this is possible, and there are not wanting those who profess to consider such as the most happy form of society. Be this as it may, the various degrees of ingenuity, of taste, and of strength of constitution, will, in the common course of things, separate individuals into different employments. One person will perhaps wish to confine his attention to the occupation of a carpenter. But, whether he can do so, depends upon the employment he may receive from the farmer: if that be sufficient to supply him and his trade with adequate necessaries, he may continue his business; but not, if otherwise. The farmer has this advantage, that he can by his own labor procure substitutes for whatever the carpenter may be able to produce; whereas the carpenter can furnish nothing which will supply the place of the products of the soil. If the employment which the farmer furnishes exceed the ability of one man, a second, third, or any number of persons, may be taken from agriculture and added to the business of carpentry. But the number can never be so increased, that the demand for their services shall be insufficient to supply them and their families with bread, meat, clothing, and fuel, and also the necessaries of their trade. If from the failure of his crops, or from any other cause, the farmer retires upon his own resources, one, two, three, or, if the cessation from employment be total, the last carpenter will be obliged to leave his trade and return to the cultivation of the soil. If, in the pursuit of a prosperous business, the carpenter lay up in store the produce of the farmer, this produce will constitute absolute wealth, as, though his trade should fail him, he will have a resource for the supply of himself and family with the means of subsistence. But if he fill his shop with his own wares, their value may be considerable, or small, or nothing, according as the demand of the farmer shall be more or less urgent, or shall entirely fail.

The introduction of one art tends to introduce others, and another person abandons his great paternal employment for the purpose of devoting his exclusive attention to the mystery of a hatter. If the demand for such wares be sufficient, a second, third, or any number of persons, may be occupied in the same trade: but, if this kind of business decline from a want of demand, the hatter must, as the pressure becomes more and more severe, retire, one after another, to their great hereditary avocation.

When, in the progress of the subdivisions of labor, two trades are called into exercise, neither of them has an exclusive dependence upon agriculture: for if the hatter, for instance, require one hundred dollars in value of agricultural produce for his support, of this amount he may obtain the value of ten dollars of such produce from the carpenter. But the ability of the carpenter to pay the ten dollars depends upon the question, whether he has received from the farmer such an amount of produce, in value, over and above what is required for his own support. If the entire demand of the farmer be sufficient in the whole to supply both trades with the necessary means for their continuance, both may be sustained, otherwise one or both must entirely fail.

Subdivisions of labor contribute largely towards improvements in the arts. The hatter and carpenter may, by their superior skill, give such an increased value to the raw material, as to procure from the farmer not only an ample supply for their wants, but sufficient also to support another trade, which may have no connection with the farmer, either upon the account of the products of this third trade being above his means or aside from his wants. But, in this case, the demands of the farmer for the products of the hatter and carpenter must be sufficient, in the way of exchange, to supply all the raw materials and necessaries required for the support of the third, as well as the two first trades.

If an effort be made to introduce a fourth trade without an adequate increase of agricultural demand, the attempt must entirely fail, and the persons engaged must fall back upon their old employment. But, if the demand be increased so as to supply a bare sufficiency of the raw material and the necessaries of life, for the support of the fourth trade, then such trade may sustain itself. But in this case, if the demand continue still the same, any accumulation of its own wares can possess no value, they are merely a useless surplusage, except so far as their further production shall cease. But if the demand be continually increasing, this trade may accumulate wealth, by increasing its own wares, and, after the same manner, other arts and mysteries, which administer to the conveniences, the comforts and luxuries of life, may spring into existence. But the same governing principle prevails throughout; they may be constantly on the increase, be stationary, or all the while falling off, as they can procure greater or less supplies from agriculture. It is upon the amount of this demand that the artist must depend, whether he is constrained to live on the plainest food, or permitted to enjoy the most sumptuous dishes; but it is not necessary that the whole of this demand, or any particular part of it, should be made by the farmer directly: it is sufficient that some or all of those who make the demand derive employment from the farmer enough to supply, with the raw material and the necessaries of life, all who are engaged in the arts, be they what they may.

Soon after the arts have been introduced in a country, the mutual demands of the farmer and artificer for their respective products would suggest the convenience and importance of a commercial agent to negociate for them their several exchanges. A farmer adventures upon the business of merchandize with a capital constituted of the produce of his farm. His first effort will be to exchange his produce for the wares of the artificer; this done, he must make another exchange for agricultural produce. If the new trader now finds that his capital is barely replaced, or that the increase of his capital is insufficient to supply him with the necessaries of life, he must abandon his commercial undertaking and return to his old occupation on his farm. If the increase be sufficient to replace his capital, and supply him with the necessaries of life, his business may be continued; and if there be a continued enlargement of capital, the amount of his exchanges will be increasing, and he may give employment to persons who could otherwise only subsist by the cultivation of the soil, as clerks in his store, or as mechanics to construct more commodious buildings for the transaction of his business. But, whether the merchant, his clerk, or the mechanics he employs, may all or any of them continue in their business, depends upon the amount of produce which the farmer is able and willing to give in exchange for the goods and wares in the store of the merchant. All the different professions, arts and mysteries in society, whether they are designed to conserve the morals, confirm the health, protect personal rights, or administer to the comforts or luxuries of life, have the same fundamental support, and there are thousands of persons at all times hanging along the skirts of the professions, of the arts and of commerce, ready to drop off at the first agricultural retraction, and, like the adventurous prodigal, return to that paternal home, where they may exchange, for the fatted calf, the yearnings of hunger and of want.

As the various business of society becomes more complicated, by the divisions and subdivisions of labor, in the arts, in commerce and the professions, motives of conveniency will suggest the introduction of a circulating

medium, which shall be used as a measure of the present value of all articles exposed for barter. The argument, which has been already advanced, now becomes expressed in different language; and it is only re-asserted in the position, that all the other departments of industry are dependent for their prosperity, or even their existence, on the amount and the price of agricultural produce.

It is a leading principle in political economy, that each and all the branches of industry will prosper most when left to their entire freedom of action, untrammelled and unsupported. In giving to this principle the universality which is claimed, it has been asserted that manufactures can never succeed in a country where the products of agriculture and the wages of labor are high; but that, as these fall, they will be gradually introduced and become prosperous. If such be the fact, manufactures may be expected most to flourish where agricultural produce and the wages of labor are reduced to the lowest depression. Such a conclusion is directly opposed to the position which makes the welfare of agriculture essential to the prosperity of every branch of industry; and, from its being plausible, may require farther consideration. Husbandry possesses the peculiar advantage of affording an independent subsistence to those whom it employs, and, as neither of the other departments of industry can exist by itself, or by any mutual support, it belongs to the husbandman to extend to either or both of them the necessary aid. But the means of the husbandman are limited to the amount of the avails of his produce. Every reduction, therefore, in the amount of these avails, must prove adverse to the arts; as, by its effect in lowering the wages of labor, and lessening the profits of trade, it reduces the aggregate income, and by consequence the aggregate demand. More than forty years ago, a Hungarian nobleman, encouraged by the low price of agricultural produce and of the wages of labor, essayed to introduce manufactures in his native country, on a large scale; but the undertaking entirely failed, for this sufficient reason, were others wanting, that the income of the farmer and laborer was too small to make an efficient demand for the wares manufactured. So if these wares were exported to foreign markets, in expectation of their entering into successful competition there, the same difficulty recurred, the home demand would be as insufficient to take off the return cargo as it was to take off the original wares. Commerce works no magical influence, in making exchanges in foreign markets; the final demand and consumption must be at home, and manufactures, basing their welfare on the income of domestic husbandry, may, with all the certainty of success, which agriculture itself possesses, go on increasing and increasing, until the soil, brought under the highest state of cultivation, shall be able no longer to supply bread and meat for an increase of population.

Besides, the supposition that a given work may be performed at the least expense, when food and wages are the cheapest, entirely overlooks the most efficient agent in the performance of labor. The hope of improving our condition is the great incentive to exertion, and where this hope is most cherished, there the most work will be accomplished. It is this hope which gives to the human muscle its activity and energy, and arouses the mind to the display of that power, which, by the invention of labor-saving machinery and expense-saving contrivances of a thousand kinds, reduces the laws of nature under a subserviency to cheapness of execution. It is the prospect of a rich reward which raises this hope of bettering our condition, and to object to high prices would be as mistaken as to object to the steam engine the amount of its cost. A survey of the actual condition of nations would almost warrant the conclusion, that effects are not more proportioned to the accumulation of mechanical power, than efficient exertion is proportional to the prices which are the rewards of labor.

Ireland enjoys a salubrious climate, her soil is said to be, naturally, more fertile than that of England; her inhabitants possess equal capabilities, and her wheat, oats and cattle, are sold in England at English prices, while they are cultivated and tended by labor, paid at half the money price; but Irish agriculture languishes for the want of that industry and care which low wages cannot procure. In India, from time immemorial, the wages of labor and the cost of the necessaries of life are scarcely a tenth part of what they are in this country; yet with all the advantage of raising the raw material, long experience, low wages and cheap subsistence, cotton goods, according to their intrinsic value, are not cheaper in India than in this country.

If men are the lords of the earth, the empire has not been acquired by mere personal strength; but, by the possession of a superior intellect. It is the mind, excited by ambitious hopes, which has wrought this conquest over inanimate matter and the brute creation; and it is the mind, that holds in its grasp all the powers of the brute and of inanimate creation, that, in order to accomplish the greatest objects, must receive the first appliances.

It is a received principle in political economy, that when profits in any branch of business are high, there is a tendency in the common course of things to a reduction; but if profits are low, there is a like tendency to an improvement, or, in other words, where all kinds of business are left to themselves, there is a constant tendency to an equalization of profits. This principle, declared to be universal, is supported by illustrations borrowed from trade, and from the nature of those adjustments which take place where traffic is concerned; but it is directly the reverse of that which applies to agriculture. In this most important department of industry, every depression of profits tends to a further depression; while every impulse, which agriculture receives in the direction of its prosperity, tends to a further advancement in prosperity.

From the year 1815 to the year 1824, northern agriculture was extremely depressed, in part, from the loss of crops, but mostly from the glut and consequent low prices of its products. The importunacy of appetites created in more prosperous times did not permit a reduction of expenditures commensurate with the diminution of income, and the yeomanry of our country, with no little discontent, perceived that they were living on their capital or running in debt. The necessity of retrenchment had however forced itself upon the most careless observer, and the disagreeable duty of buying less and giving less employment had so far been attended to as to throw out of business numbers who had been employed in commerce and in the arts. Commerce having a large portion of its capital employed in transactions connected with the products of southern agriculture, in which the demand and supply were generally on the increase, did not feel the shock so sensibly as the mechanic arts. A New-York periodical, in the year 1822, announced that 1100 carpenters had, that season, left the city to seek employment, and probably there are but few persons in the country who cannot recal to their recollection the names of many mechanics of their acquaintance, who abandoned their trades for the pursuit of agriculture; not because agriculture was prosperous, but for a consideration paramount to all profit. By tilling the earth, they could procure bread and meat for the sustenance of their families. All the merchants, mechanics, and professional persons, who, during this depression of agriculture, left their proper vocations for rural pursuits, must have lessened the demand in market for agricultural produce; when, at the same time, whatever they produce beyond their own consumption, would be increasing the glut and tend to lower prices. A further reduction of expenditures would then become necessary to the farmer, by a further resort to those substitutes which he could procure on his farm by his own labor. An unfavorable action and re-action being in full operation, a string of persons engaged in the other branches of industry must, if things were left to themselves, have been, all the while, increasing the evil, by continually adding themselves to their great paternal employment.

In the year 1492, Ferdinand, of Spain, expelled from his dominions 150,000 Jews, on the ground that they had got into their own hands all the commerce of the kingdom. If we suppose that each of these Jews consumed annually to the amount of twenty dollars in value of the products of agriculture, the demand for such products must have been lessened by the amount of $3,000,000. This, at that early period, when the demand for agricultural produce must have been small, was sufficient to throw all the branches of industry upon a retrograde movement. The reduced income of the farmer must have rendered necessary a resort to substitutes, for his former purchases. Those engaged in manufactures, then in their infancy, must have been compelled to till the land, and thus commenced that unfavorable action and re-action whose effects are still felt in the slow progress of the arts and in the inactivity of the Spaniard.

But if, in any of the stages of decline, an impulse in an opposite direction be given to the business of agriculture, by raising the price of its products, the tendency is then to a continued course of prosperity. High prices stimulate to greater exertion, a larger amount of produce is the natural consequence, while an increasing demand for them is secured, by a string of persons who are continually leaving their hereditary profession to fill up the increasing employments in commerce and in the arts. An increase of prices, of exertion, of produce, of manufactures, and of commerce, forms the circle of causes and effects, which, by incessant impulses, are urging on a nation, already in the course of agricultural prosperity, to the highest point of population, of opulence, and of power. Every person then has a deep interest in the welfare of agriculture, a branch of industry which stands first in importance, and is alone in the principles by which it is governed.

The main spring, which sets in motion the numerous wheels of active industry, is a de-

mand for the products of agriculture. This demand is of two kinds, the foreign and domestic. In Europe, the seat of those manufactories, from which we formerly obtained most of our supply, the admission of our bread corn was either entirely prohibited or subjected to a high duty. Our principal market was in the West Indies, and in South America. From grain exported to these countries, returns were received, and exchanged for foreign manufactures. Experience has taught us, that our staple articles, when exported, after paying duties, freight, insurance and all other charges, would allow of an average price in our market of about eighty cents per bushel for wheat, fifty cents for rye, forty cents for maize, and twenty-five cents for oats. By an income derived from these prices, the farmer had to regulate his expenditures, and the merchant the transactions of his business.

Domestic manufactures create a demand for the products of agriculture, to the amount of their cost. In making a piece of broadcloth, about one-half the expense incurred consists in the purchase of wool, the other half is paid out in wages; of these wages a large portion is laid out in provisions, by the laborer; the residue is paid to the hatter, tailor, or shoemaker, who by these means procure their bread and meat. In this way, the wages of labor may within a short period be traced to the purchase of agricultural produce. The value of the articles manufactured in our country has been estimated at an annual amount of $100,000,000. If to this be added the wages of labor paid by a prosperous commerce, we shall have some idea of the magnitude of that cause which has arrested the retrogade movement in our agricultural affairs. Experience has taught us, that since the partial encouragement which has been given to domestic manufactures, the price of agricultural produce has risen in market about fifty per cent.; if to this we add an increase of produce, arising from more vigorous exertion, of one third more, we shall find that the income of husbandry, which numbers four-fifths of our population, has been doubled, while the other one-fifth of our population has received benefits fully proportional.

The progressive advances of manufactures and of commerce in England have augmented not only the supply, but the prices of agricultural produce, to such an extent, that capital, vested in the business of husbandry, yields more than double the profit to that employed in manufactures or commerce, accompanied, too, with no other tendency to an equalization of profit on capital, than by the exertion of that lifting power which she possesses in raising up the other departments of industry towards an equalization of her own prosperity. But so prosperous a condition of agriculture cannot be realized in our country, without an efficient encouragement being given to the manufactures of all articles of which the raw materials are of home produce. This given, it might be clearly demonstrated that agriculture with us would become the most profitable of all employments. On the contrary, should the old system be again introduced, of relying upon the exportation of grain for the purchase of such foreign products as the wants of the country require, it may be shown with equal clearness, that not only our agriculture and commerce would be paralized, but that the soil itself would become as barren as that of Sicily, Egypt, or Palestine.

Situated at a distance from foreign markets, our exportations of agricultural produce have consisted almostly entirely of grain, cotton, wool, and tobacco. These are exhausting crops, and wherever their cultivation has been a leading object in husbandry, the soil has been rendered sterile and unproductive. Sicily, for many centuries, contained a numerous, rich and powerful population. One of her rulers, we are informed, gave every encouragement to the cultivation of grain, and constructed ships and vessels of all sizes for its exportation. The first effect was a rapid accumulation of wealth, for which his governement has been greatly extolled; but in a few years, the soil became exhausted of its fertility, and for centuries Sicily has been proverbial for its barrenness. Egypt was once the seat of arts and sciences: all have read of the extreme richness of her soil; but after her conquest by the Romans, her domestic policy was changed, and she became the granary of Italy. Now, and for centuries, her fertile land has been limited to small tracts, which are enriched by the overflowing of the Nile. The hills and valleys of Palestine, after having sustained for ages the highest reputation for their richness and fertility, were at length resorted to for supplying the Roman armies with bread corn; now, no country which has ever been cultivated is more barren and desolate.

In 1793 commenced the general war which opened the European ports for the free admission of grain. At this period, the north-eastern part of this state and western Vermont were in forest, except some few farms, whose soil was fresh and unworn. Wheat soon rose in price from seventy cents, to from two to three dollars per bushel, and its production became a leading object with the farmer. The whole of this northern tract of country was in a few years brought under cultivation: there is scarcely a town which did not in its turn enjoy a high reputation for the great quantity and excellent qualities of the wheat it sent to market. It is now about twenty years since this whole region of country has failed to raise grain enough for its own consumption. Cotton and tobacco are exhausting crops, and their culture, rotating with grain, has so completely taken from extensive tracts of rich land, at the south, their fertilizing principles, as to exhibit broad spaces lying open and waste, without cultivation or value.

It is not the importance of domestic manufactures, as they give a profitable investment to capital, which presents their strongest claims to protection; but the indispensable necessity, as well at the south as the north, of having, instead of a foreign market which calls almost exclusively for exhausting crops, a home demand, which directs the attention of the farmer to such a rotation of exhausting, in connection with fertilizing crops, as is consistent with an improving husbandry.

TO INCREASE THE STRENGTH AND FIRMNESS OF THREAD AND COARSE CLOTH.—The lixivium of oak has been employed for scarcely any other purpose than that of the tanner, and yet it is applicable to a great variety of uses. If thread, cords, nets, coarse linen, &c. be steeped in it, they acquire greater firmness and durability. Fishermen have long resorted to this. Nothing is more apt to spoil than skins, and yet this preserves them. It is the same with hempen and linen cloth: they contain much gummy and resinous matter, which, with tannin, forms an envelope, and thus adds to their durability. Linen ought not to steep more than eight or ten days in this solution: it acquires a very brown color. When this color fades, the operation may be repeated.

The best method of preserving nets and cordage is the following: Dissolve two pounds of Flemish glue in fifteen gallons of water, dip the nets, &c. into this solution, and then steep them in a strong solution of oak or chesnut bark,—the tannin combines with the gelatine, and forms, between the fibres of the hemp, a solid net work, which adds great strength to the cords. Any bark which contains tannin may be employed in making a decoction; so bones, parings of skin, remains of fish, &c. and generally all substances containing gelatine, may be used in making a gelatinous solution. Fishermen, who often throw away on the shore gelatinous fish, may use them for this purpose.—[Jour. des Connais. Usuelles.]

OBERLIN COLLEGIATE INSTITUTE.—We have given some notice of the origin and objects of this institution in a former number. From a recent circular we learn the following particulars.

The system embraces instruction in every department, from the Infant school to a Collegiate and Theological course. Physical and moral education are to receive particular attention. The institution was opened in December last, and has sixty students; about forty in the academic, and twenty in the primary department. All of them, whether male or female, rich or poor, are required to labor four hours daily. Male students are to be employed in agriculture, gardening, and some of the mechanic arts; females in housekeeping, useful needle-work, the manufacture of wool, the culture of silk, certain appropriate parts of gardening, &c. The Institution has five hundred acres of good land, of which, though a complete forest a year ago, about thirty acres are cleared, and sown with wheat. They have also a steam mill, and a saw mill, in operation. During the present year it is contemplated to add fifty acres to the cleared land, to erect a flouring mill, shingle machine, turning lathe, a work shop, with an extensive boarding house, (which together with the present buildings will accommodate about one hundred and sixty students,) furniture, farming, mechanic, and scientific apparatus; and begin a library.

During the winter months, the young men are at liberty to engage as agents, school teachers, or in any other occupation they may select. The expenses of students in the seminary for board at the table spread only with vegetable food, are eighty cents a week; and ninety-two cents a week for the same with animal food twice a day. Tuition is from fifteen to thirty-five cents a week. The avails of the students' labors have thus far varied from one to eight cents an hour. The average has been five cents. A majority of the male students have, by their four hours' daily labor, paid their board, fuel, lights, washing and mending, and some even more; and this without any inteference with their progress in their studies.

The time to be spent at this Institution, in preparation for the various professions and employments of life, is not yet defined, nor a single course of study marked out as the only one through which an individual can attain a desired station. Diplomas are not to be given according to the time spent in study, but to the student's real acquirements.—[Annals of Education.]

We learn from the Annals of Education, that this plan of instruction is viewed very favorably in Georgia.

CIRCUIT SCHOOLS IN ILLINOIS.—There is room for much encouragement to the friends of common education in Illinois. The Illinois Patriot, the Gazette, and the Pioneer and Western Baptist, are ably advocating the cause; and a late number of the latter paper gives notice that a number of well qualified circuit teachers can find employ in that state by making application as there directed. We are glad to find that among the qualifications recommended, are *aptness to teach, conciliatory manners, and good moral character.* With these pre-requisites, the course proposed is as follows: The teachers being provided with suitable books and lessons on cards, are to take two, three, or more schools in different neighborhoods, visit each once, twice, three, or more times in a week, hear the scholars recite their lessons, lecture, and explain the subjects, and thus enable those of any age who are disposed to learn, *to learn to teach themselves*, by the aid given them by their teachers. It is stated, moreover, that there are already a number of settlements where the people are desirous of having the circuit system put in immediate operation.

A Classification of Peaches and Nectarines. [Extracted from Mr. Floy's Edition of Lindley's Guide to the Orchard.]

The confusion of the sorts of Peaches and Nectarines, the misapplication of their names, and the perplexity thus occasioned both to the nurseryman and the gardener, are sufficient inducements to attempt such an arrangement as may remove these inconveniences.

To accomplish this, *three classes* are created, each of which has *three divisions*; these are each separated into *two subdivisions*, and every subdivision into *two sections*; making in the whole thirty-six sections. Part only of these sections are applicable to those varieties we are now acquainted with; the others will remain to be filled up as new kinds arise, there being at present no plants with such characters.

In the following tables, the *classes* are founded on the leaves, and the *divisions* on the flowers.*

Class I.—Contains those whose leaves are deeply and doubly serrated, having no glands. Fig. 1.

Class II.—Those whose leaves are crenate or serrulate, having globose glands. Fig. 2.

Class III.—Those whose leaves are crenate or serrulate, having reniform glands. Fig. 3.

An accurate observer will distinguish other characters in the glands; they are either sessile or pedicellate; but these distinctions are too minute for application on the present occasion.

The form of the glands, as well as their position, is perfectly distinct; they are fully developed in the month of May, and they continue to the last permanent in their character, and are not affected by cultivation. The globose glands are situated, one, two, or more, on the footstalks, and one, two, or more on the tips or points of the serratures of the leaves. The reniform glands grow also on the footstalks of the leaves, but those on the leaves are placed within the serratures, connecting, as it were, the upper and lower teeth of the serratures together; their leaves, when taken from a branch of a vigorous growth, have more glands than the leaves of the globose varieties. It will, however, sometimes happen, that glands are not discernible on some of the leaves, especially on those produced from weak branches; in this case, other branches must be sought for which do produce them.

With regard to the flowers, on which the divisions are founded, all authors previous to Duhamel have described large and small flowers only. Both in the *Bon Jardinier* and in the *Pomone Francaise*, "fleurs moyennes," or middle flowers, are mentioned; the notice of them, however, originated with Duhamel, who, in the descriptions of several of his peaches, speaks in a manner which indicates even four sizes, viz. *fleurs grandes*, **fleur sussez grandes*,† *fleurs petites*,‡ *fleurs tres petites*;§ and on examining the trees thus described, the differences are evident. In noticing these, however, it is not intended to convey an idea that a fourth division is necessary; on the contrary, it would perplex rather than elucidate. In fact, it requires some practice to distinguish the middle from the small-sized flowers; the former are larger in all their parts, but in other respects there is no difference between them; and in maintaining the division, I have conformed more to the authority of *Lelieur* than to my own opinion.

We now come to the fruit; with regard to which nature has furnished two distinct characters in the external appearance, as well as two in the internal structure. The first of these depends on the downiness or smoothness of the skin; the former being true peaches, the latter our nectarines, known in France only as *peches lisses*, or smooth-skinned peaches. Each of these are divisible, from their internal structure, into the Pavies or Clingstones, and the melting kinds; the former having firm flesh adhering so closely to the stone as to be perfectly inseparable from it; the latter having soft dissolving flesh, separating readily from the stone, and leaving a few detached pieces of the flesh only behind. As the mature fruit in vegetable economy appears to be the last stage of nature in her progress towards reproduction, I have adopted it as the most natural on which to found my subdivisions and sections.

Accordingly, the *classes* of Peaches and Nectarines may, by the examination of the leaves, be ascertained in the first year the plant has been raised; the *divisions*, from the flowers, in the spring following; and the *subdivisions* and *sections*, founding the former on the character of the skins, the latter on the qualities of the flesh, in the succeeding summer or autumn; and whether the number to be submitted to examination be great or small, the arrangement may be effected with equal facility and precision.

A Synoptical Table of Peaches and Nectarines.

Class 1.—Leaves deeply and doubly serrated, having no glands.

Divisions	*Subdivisions.*	*Sections.*
1 Large Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters
2 Middle Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters
3 Small Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters

Class 2.—Leaves crenated or serrulated, with globose glands.

1 Large Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters
2 Middle Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters
3 Small Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters

Class 3.—Leaves crenated or serrulated, with reniform glands.

1 Large Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters
2 Middle Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters
3 Small Flowers	—1 Peaches	—1 Pavies
		2 Melters
	2 Nectarines	—1 Pavies
		2 Melters

The names given to some of the English Peaches and Nectarines are so directly at variance with the classification of Duhamel,* which, as far as it goes, is unobjectionable, that I cannot avoid observing on them, lest it should be supposed that I acquiesce in so incorrect a nomenclature. The classes of Duhamel are four. The *first* are called *Peches*, being those with downy skins, the flesh separating from the stone. The *second* are called *Pavies*, being those with downy skins, the flesh adhering to the stone. The *third* are called *Peches violettes*, being those with smooth skins, the flesh separating from the stone. The *fourth* are called *Brugnons*, being those with smooth skins, the flesh adhering to the stone. The two last classes include those fruits which we call Nectarines. The names, therefore, which the English gardeners have applied, such as Violet Hative† to a Peach, and Brugnon to a melting Nectarine, are absolutely improper.

* The cuts have been taken from the Horticultural Transactions.—Am. Ed.

* Madeleine Blanche.
† Avant Peche Blanche.
‡ Bourdine.
§ Bellegarde.

* Traite des Arbres Fruitiers, par Duhamel, vol. ii. p. 4.

† Miller, in his Dictionary, has fallen into an error in describing his *Lisle Peach*; he says the French call it *La Petite Violette Hative*, which cannot be correct.

Preserving and Planting Peach Pits.—Seeds intended for planting should be buried in the ground immediately after the flesh is taken from them, to prevent their becoming dry, as in that case they are more sure to come up, than when they are allowed to dry and remain out of the ground until late in the fall. Whether the seeds are planted at first in the places where they are to remain, or are buried as preparatory for planting, it is important that they should be put in the ground either before they become dry, or so early in the season that they may swell again before winter, and that they should be so near the surface as to insure their being frozen, otherwise they may lie in the ground, like rose and thorn seed, one year before they will vegetate.

Preserving Bacon.—Dr. Bartlett: There is much said about preserving Bacon. I have noticed in all the communications on the subject, that it is recommended to have the Bacon *well dried*; and I think this is the principal thing required. If Bacon is not well dried, there is nothing that it can be packed in, that will keep it sound. When Bacon is hung up for drying, boards or plank should be laid on the joints over it, in order to keep dirt or dust from falling on it, also to keep the smoke from escaping too soon. A smoke should be kept under it till it is thoroughly dry, and be continued in wet weather in the summer. Whoever will follow this plan will save their Bacon.—[Southern Planter.]

Rhubarb or Pie Plant.—The cultivation of this plant is on the increase. The stalks are put up in bunches, like asparagus, and sold in the markets at fair prices.

MEMORANDUM OF A MILKMAN.—The following was taken down in pencil mark by a gentleman, on a visit to a milk establishment in the vicinity of this city:

"The proprietor has 85 cows; purchases them with calf for 25 to 35 dollars; never allows them to take bull; milks them as long as they will give a good mess, or until fat enough for the butcher; replaces them with new milch cows; ties his cows in the stable when purchased, and does not turn them out, neither day nor night, until sold. He feeds on good hay, and as much distillery swill as they will drink, say one barrel per day each. Before selling them to the butcher he gives three or four quarts of Indian meal per day extra; are milked at four o'clock in the morning, and at one in the afternoon. One man milks and tends ten cows. Each cow averages, he thinks, about seven quarts per day. The cows are regularly and daily curried, and cleaned, and salted twice a week. Would not take salt hay as a gift."

RESULTS OF CROSSING THE IMPROVED SHORT HORNED AND DEVON CATTLE.—Mr. Editor: In the twenty-seventh number of your valuable Magazine, when giving an account of my two years old steer, you also gave an extract from my letter on the advantages attendant on crossing cows of different breeds with improved short-horn bulls, and in confirmation of this opinion (not hastily adopted, but the result of several years' practical experience, and a close attention to the experiments of several friends during the last seventeen years,) I send you the portrait and a short account of a two years old Durham and Devon heifer of mine, lately slaughtered by Mr. Wm. Daniel, of Abergavenny, and accompany it with a few brief statements of the advantages derived from this system by several of my own personal friends.

This heifer was the second cross, and was of a light grey color. She weighed 35 scores and 8 lbs.; rough fat, 98 lbs. She was allowed to be the fattest and best beast of her age, in all points, ever seen in Abergavenny. She had a dead calf about six weeks before Christmas; was dried the 17th of January, and killed the 10th of June. She sold for £19 3s. 6d.

Her live weight, 8th of June, was		1232 lbs.
Ditto	17th January,	840
Increase in 140 days		392

Being aware that strong prejudice and much incredulity existed on the subject of crossing, I courted the attention of all the respectable farmers, breeders, and feeders, in this neighborhood; many came to see her when first put up, and repeatedly afterwards during the five months she was feeding, and they all concurred in saying, she went on faster than any beast they had ever seen. She never had any oil cake.

I have seen many excellent beasts bred from *improved* short-horn bulls and long-horn cows; indeed, I never knew any one of these bulls put to any cow where the produce was not superior to the dam. But the cross which I advocate, and with which I am best acquainted, is that with the Devon cow. I have uniformly remarked, that each succeeding cross was attended with a proportionate improvement in size, quality of flesh, and aptitude to fatten; in every instance they have shown themselves superior milkers, and stand to the pail till within six or eight weeks of calving, and several instances have come under my own knowledge where they have never been dry since they first calved. And so highly are they prized as milkers, that a friend of mine, who hired out dairies, informed me that the dairymen gave him nearly £2 per cow, per year, more, for the half and three-quarter breeds, than they would give for cows of any other breed.

A friend of mine had about a dozen North Devon cows, small in size, but nice in quality, and from these he commenced, about twenty years since, breeding with short-horn bulls. He has since invariably used those bulls. With each succeeding cross the stock have rapidly improved in every essential, and the only trace of the Devons which I could perceive when I last saw them, about two years since, was a peculiar richness in their coloring. He breeds about thirty annually, and generally sells his three years olds in the autumn, at from £17 to £22; and I have known him sell in-calf heifers to jobbers, at fairs, as high as thirty guineas each. All his stock are superior milkers. Here we have twenty years' experiments, and continued improvement. Within the last eight years I have sent many North Devon heifers to Ireland, to friends residing in different counties, and some of them occupying land of very inferior quality. I also sent over two young Durham bulls, from the stock of the Rev. Henry Berry, to cross them with. They have all crossed them with short-horn bulls at my recommendation, and the accounts they give are most satisfactory. They say the two years old half-breeds are as good as the three years old Devons, and are all good milkers. One of these bulls, by Mr. Berry's Mynheer,* has been four times exhibited in three different counties, and has each time taken the first prize. He was last year sold for sixty guineas, and is now serving cows at £1 each.

If any testimony were wanting to corroborate the statement, in Number 26 of your Magazine, of the benefit to be derived from Mr. Knight's method of cultivating potatoes, I should be happy to add mine. I have for several years been in the habit of planting the entire potato, and making the rows three feet six inches apart, and have found this plan always succeed. I gave them raw to my cattle: to fatting beasts about 40 lbs. per day, with hay; to store beasts, about half that quantity with straw; and to my milking cows, I allow 24 lbs. daily, with hay. I have given them steamed, but found the cattle did not do well after them when put to grass. After the raw ones, they thrive rapidly on grass.

I am, sir, your's, very obediently,
C. H. BOLTON.

Brynderry, Abergavenny, June 30, 1833.

CREDIT—SHEEP.—There are two requisites to obtain credit, good character and business capabilities or habits. These are the poor man's riches. Credit, like all other good things, must be judiciously resorted to, and carefully guarded, otherwise it will prove a source o misfortune and pain. The following is from the Genesee Farmer:

Late in the summer of 1830, I borrowed $100, and went into the neighboring towns and purchased sixty-eight sheep, at the average cost of $1.30 per head, which left me remaining on hand $13 of my borrowed money. At this time I had on hand twelve sheep, which, with those I bought, made me a flock of eighty head. The next winter I kept them on good fine hay, without any grain, until the first of March, when as the ground was bare, I quit feeding hay, and turned them out upon my old pastures, and commenced feeding a little corn. The winter of 1830-31, it will be recollected, was one of uncommon severity; but notwithstanding its length and coldness, I lost but one sheep, and that by casualty. I continued feeding grain until the first of May, when, as the grass had got a considerable growth, I thought it unnecessary and quit entirely. That season I raised thirty-six lambs, which increased my flock to 115. In June I sold the wool produced by my old sheep for $150.06. I went and redeemed my note, and had *left of money I received for wool* $44. The winter of 1831-32 I fed my sheep as before, but lost three head; consequently, in the spring, had but 112 to shear, which produced 300 pounds; this I sold at the very low price of 35 cents the pound, or $105 for 300 pounds. The same season I raised 45 lambs, and sold 60 head of my old sheep for $78.60; making the amount of sales from my flock that season $181.60. In the winter of 1832-33, I lost 6 sheep; in the spring sheared 91; but in consequence of the great proportion of lambs, the produce of wool was small. I retained a number of fleeces for home use, and sold the remainder (176 pounds) for 50 cents the pound, or $88 for what I had to sell.

Thus it will be seen that my flock, for three years, has averaged 94 head, and that the *actual* sales from it have amounted to $419. The last summer I raised 30 lambs, and sold none of my old sheep; consequently, in August last, when the three years had expired since my purchase, I had on hand 119 sheep, which is 25 above the average for three years past, and which 25 sheep were worth at that time $2 the head—making $50 for 25. This added to my sales would make $469 for the produce of 94 sheep for three years, or $156.33 for one—equal to $1.66 per head annually.

I have made the following estimate of the expense of keeping 100 sheep for one year. I may be incorrect; if so, I hope some of your correspondents will correct me.

Twenty acres of good land, well turfed, will keep 100 sheep a year, viz.: five acres of meadow, producing two tons of hay to the acre, will winter, and fifteen acres of good pasture land will summer them. Twenty acres of land at $40 per acre would cost $800, and 100 sheep, at $2 the head, $200: making the cost of land and sheep $1,000.

Interest on $1000 one year, is - - -	$70.00
Cutting and securing 5 acres of grass -	5.00
Thirty bushels of corn, at 4s. - - -	15.00
One barrel of salt, at 16s. - - - - -	2.00
Washing and shearing 100 sheep - -	5.00
	$97.00

If the above estimate be correct, it will be seen that I have realized from my flock a nett profit of more than fifty per cent. for three years together. W. G. B.

Genoa, March 31, 1834.

DISEASES OF HOGS.—Mr. L. Tucker: I am engaged in milling, and have kept a stock of about three hundred hogs in a large frame pen, divided into twenty-four rooms, with plank floor, and lodging rooms covered and boarded, leaving open only sufficient room for them to enter. They have been fed on bran, shorts, and coarse middlings. I have lost, during the last winter, about fifty—many of them were fat, and would weigh two hundred when dressed.

They were taken with weakness in the back, and lose the use of their hind parts—generally live from two to three weeks. On opening them, have always found a great many slim worms, about an inch long, in the leaf, and about the back bone. I have tried all medicine recommended by farmers in this section, and in no instance had a cure.

I have a neighbor, who purchased a drove last fall, and has given them seven hundred dollars worth of corn, and the stock now left are not worth the first cost in consequence of the same disease.

You, or your correspondents, will confer a favor by giving me such information as you or they possess respecting a remedy.

Yours, respectfully, R. H. H.

Venice, Huron co., Ohio, April 2.

DOG POWER.—John Farley, of Danville, Vt., advertises a patent "Dog Churn." He says, that churning is performed by the labor of dogs; and that the machine may be applied to other uses, such as turning grindstones and washing clothes. Women may now introduce "dog power" into their kitchens and dairy rooms, and seat themselves in the parlor.

---

* Mynheer is a full brother to the cow whose portrait is given in this Number.—[British Farmers' Magazine.]

ADAPTATION OF PLANTS.—The water melon, the most juicy of fruits, abounds in hot and dry climates. The pitcher plant opens its lid in wet and dewy, and closes it in dry weather. In polar regions, where vegetation does not abound, there is little or no appetite for vegetables—the system requires the stimulating power of animal food. Dr. Paley has remarked that the poppy when growing hangs down its head, but when it begins to flower, it raises to the air and sun to ripen its seeds. Those flowers that keep erect, are said generally to have the pistil shorter than the stamens, that the farina or fertilizing dust may fall on it; and so vice versa. Some flowers that require much heat turn around with the sun; others shrink up into the shade.

CULTURE OF RAPE SEED FOR OIL.—Colchicum or rape seed is of the greatest importance, and produces an oil which is, and has long been, much wanted for manufacturing purposes. This seed is grown abundantly in all parts of Europe, and the oil made from it is extensively used in the process of manufacturing cloth: it is, I believe, the cheapest oil they have, and takes the place of common kinds of olive oil, which the manufacturers of this country are obliged to use at a great cost. This is a matter of great importance, when it is known that to every 100 pounds of wool carded there is consumed from two to three gallons of oil. The rape seed oil is so cheap and abundant in Germany, that it is much used in adulterating linseed oil; hence the bad quality of some of the German paint oils, as the rape seed oil does not possess the drying qualities of that from flax seed, and is therefore unfit for the purposes of painting, &c.

Having been for a long time engaged in the manufacture of flax seed oil, and having made various experiments on other seeds, I have, of course, had some experience on the subject. In relation to rape seed, I had an excellent opportunity of making full and satisfactory experiments. In the year 1822 or 1823, an English gentleman, who was familiar with the culture of rape seed, and who had a farm somewhere in the neighborhood of Salem, N. J. brought to my establishment about forty bushels of rape seed, which he had produced upon his farm. The account he gave of its culture was this. Two acres were sown with this seed (broad cast) in the month of August; it sprouted, and was growing very handsomely, but late in the fall the cattle broke into it, and, as he thought, completely destroyed it. He abandoned the experiment, and suffered his cattle to roam in it all winter; but in the spring, observing it sprouting again, he put up the fence, and as he expressed himself, "let it take its chance." The two acres, with this, as he considered it, unfair experiment, produced him about forty-four bushels of seed, for which I offered him four dollars per bushel, which he refused to take. I expressed it for him; and although my apparatus was not by any means perfectly adapted to the purpose, the manufacture differing in some respects, not necessary to state, from that of flax seed oil, I produced three and a half gallons of oil per bushel. The cake, that is, the pulp, after the oil is expressed from it, he valued highly for fattening cattle, and refused to take seventy-five cents per bushel for it; the oil he sold to a woollen manufacturer for one dollar and thirty cents per gallon, thus, including the cake, realizing five dollars and thirty cents per bushel, out of which he paid the expense of manufacturing. It is, I am told, considered in England a profitable crop, although the price is not much, if at all, above two dollars per bushel. The gentleman was in high spirits as to the result, and told me he intended to go into the culture of it more extensively; but, from what cause I do not know, I have never seen him or heard from him since—whether he failed in his experiments, died, or returned to England, I do not know. I have not, however, the least doubt that our soil and climate are well adapted to the culture of this seed; it is of the same family with the cabbage, which every one knows grows luxuriantly here. We have, besides, such a variety of soils and climates in our country, that if it will not succeed in one district it certainly will in some other. —[Journal Franklin Institute.]

DRY ROT.—An officer of the navy, now dead, was informed by the Rev. G. Williams, of Rhicolos, in North Wales, that it had been found, from long experience, that the water in the reservoirs for supplying the precipitate pits at the copper-mine works at Parry's mountain in Anglesea, has the property of preserving timber from decay and dry rot in a surprising manner, by the short process of steeping it therein a few weeks only, and that it has such a powerful effect in hardening the wood, as to blunt the sharpest tools. It, consequently, is found necessary to shape and fit the wood completely for the use intended, before it is put into this water for seasoning.

The water at Parry's mine is impregnated with copper, sulphuric and vitriolic acids. It is preserved in large reservoirs for supplying the precipitate pits, which are filled with old iron, that attracts the copper from the water.

It appears that the farmers, when they find their timber for agricultural purposes too green for immediate use, steep it for a few days in the copper-water, which has the power of extracting the sap, and fitting it for use properly seasoned.

I understand that a complete transmutation takes place in the iron, it gradually becomes incrusted with the copper, whilst at the same time the acids act as a corrodent; so that a piece of iron thrown in, after a certain time, comes out copper, but whether weight for weight, or size for size, I do not recollect.

The Admiralty, I believe, are in the possession of this information; if, however, the present method of immersing ships and timber in sea-water is successful in curing or preventing the dry rot, we certainly cannot obtain a more easy or cheap method for gaining the desired end. The component parts of sea-water, common salt, marine magnesia, and salenite, are very dissimilar to those of the mineral waters of Parry's mine, and it will be curious if both, nevertheless, produce the same effect upon wood.—[U. S. Journal.]

INSECTS.

"I will say a few words on winged insects, which, in their origin and metamorphoses, offer the most extraordinary known miracles perhaps of terrestrial natures."—[Salmonia.]

A lover of natural history cannot I think be a bad man, as the very study of it tends to promote a calmness and serenity of mind favorable to the reception of grateful and holy thoughts of the great and good Parent of the Universe. He cannot be a cruel man, because he will be unwilling wantonly to destroy even an insect, when he perceives how exquisitely each of them is contrived, and how curiously it is made for the station it is destined to fill in the animal world. Few things have afforded me greater pleasure than watching the wonderful instinct which induces insects to watch over and protect their offspring. An instance of this occurred under my own observation in the case of a sand-wasp. This animal was observed to fly backwards and forwards very frequently from the side of a window to a gravel walk near it. After some time it was perceived that she collected the finest particles of sand from the walk, with which, under a projection of the window, she formed a cell. When the cell was completed she flew to a neighboring bush, from whence she selected a little green caterpillar, which with some difficulty she contrived to force into the cell. Having next deposited an egg on the caterpillar, she covered over the top of the cell with a sort of paste made of fine sand, sloping it so that no rain could rest upon it. In this manner, four different cells were completed. After a lapse of some time the young wasps emancipated themselves and disappeared. There seems no reason to doubt but that the caterpillars which were so curiously introduced into the cells served not only to protect the young brood from too much heat or cold, which they would have been subject to, had they merely been deposited at the bottom of an empty cell, but also for food, till they were capable of extricating themselves from their state of confinement.

Another insect also of the *sphex* genus will dig a hole in sandy ground, drag a large spider, or the caterpillar of a *phalæna*, into it—lame it by biting off its legs—and then lay an egg in each hole; so that the larvæ may suck out the spinning-fluid of the animal which the mother has buried, and in that way prepare itself a habitation in which to pass through its metamorphosis.*

The following remarks on insects are selected from Blumenbach's Elements of Natural History, and may interest those who have not had access to his works.

"It has been calculated that the abdomen of the female white ant, when about to lay her eggs, is two thousand times larger than previous to impregnation. She can lay eighty thousand eggs within twenty-four hours. Insects which undergo metamorphosis are called larvæ, whilst in the state in which they escape from the egg. They are mostly very small on their first appearance, so that a full-grown caterpillar of the willow-moth, for instance, is seventy-two thousand times heavier than when it issues from the egg. On the other hand, they grow with great rapidity, so that the maggot of the meat-fly, at the end of twenty-four hours, is one hundred and fifty-five times heavier than at its birth.

"The carrion-beetle (*vespillo*) scents from a distance the bodies of small animals, as moles, frogs, &c., and buries them under ground for the purpose of depositing its eggs. Six of them will bury a mole a foot deep in less than four hours.

"The eyes of insects are of two kinds: the first are large hemispheres, mostly composed of thousands of facets, but in some instances of numerous conical points, and covered on the inner surface with a layer sometimes glittering, sometimes variegated. Those of the second kind are simple, small, and vary as well in number as position. Eyes of the first kind seem calculated for seeing at a distance—of the second for looking at near objects. Only a few insects can move their eyes.

"The *antennæ* are organs of feeling, which are of great importance to insects, on account of their hard, insensible covering, and the immobility of their eyes. They appear to possess their most acute feeling in the attenna, as man has in the tips of his fingers; and as for the most part they live in darkness, supply the want of light by this contrivance.

"The eggs of some insects are covered with a kind of varnish to protect them from the destructive influence of rain and other accidents."

It would, however, be an endless task, if I were to enter into all the wonders of the insect creation. Latreille says, "that the wisdom of the Creator never appears to excite our admiration more than in the structure of those minute beings which seem to conceal themselves from observation; and Almighty Power is never more strikingly exhibited than in the concentration of organs in such an atom. In giving life to this atom, and constructing, in dimensions so minute, so many organs susceptible of different sensations, my admiration of the Supreme Intelligence is much more heightened than by the contemplation of the structure of the most gigantic animals."—[Jesse's Gleanings in Natural History.]

---

* Blumenbach.

GROWTH OF AN EVERGREEN BRANCH.—*Mr. Fleet:* I took a branch of evergreen and placed it on a dry wall: when hung up it was six inches long; after hanging three months it measured eight inches. I would inquire, from whence did this plant acquire its food? It did not obtain it from the earth by its roots, for it had no root. It appears to me it must have derived its food and increased from the atmosphere. I am at a loss to even guess what is the specific food of such a plant, and cannot conceive how it can deposite any thing in the earth; but perhaps some of your correspondents may be able to explain the difficulty. RATIO.

REMARKS.—The above is new to us. We hope it will not prove a "fish story."

CAPITAL REQUISITE IN FARMING.—Mr. Editor: Among the many causes assigned for ill success in agricultural pursuits, of which farmers are often reminded, there is one but rarely adverted to, and I suspect by many farmers has never been considered at all. And that is the absolute necessity of a loose capital to enable a farmer to cultivate his farm to any advantage. The amount of this capital should be nearly equal to the entire annual product of his farm, after deducting his annual gain, if there be any.

Suppose the entire annual product of a farm to be $1000

Deduct suppose annual profit .	$150	
Deduct also such portion of the milk, butter, grain, potatoes, and sauce generally, as is used in the family during the same season of their production, .	80	
		230
Leaving to be expended in living and working farm before receiving returns of produce of farm, ...		$770

Now if the farmer himself is both able and willing to perform the labor of one good hired hand, it will be equal to about 200 dollars of this sum, leaving 570 dollars the least amount of loose capital that will suffice to carry him through the year, without being pinched or obliged to slight his work. The amount of wool, flax and provisions, reserved for the consumption of the family from year to year, is included in this sum.

As this is a subject of importance, and as I wish to be clearly understood, I will proceed a little further. Farmers who live so far from market as to find it impossible, or inconvenient to get the produce of their farms to market before winter (and these constitute a very large majority), it will be seen at once, must incur the entire expense of working their farms and providing for their families for the year, before they realize any thing worth naming from the produce of their farms. Their hired hands must be paid in autumn, if not sooner, and if they expect to get store goods and mechanics' work at reasonable rate, they must pay as they go along. A farmer sells his pork, butter, cheese, grain, &c. from January to April. The cost of producing all these was paid, (or ought to have been,) the summer and autumn before. His sheep are sheared in May, and should he be able to convert their fleeces immediately into money, (which he cannot always do,) still the whole expense of producing this wool, excepting about two months spring pasturing, was paid the year before, a considerable portion of it the August before.

It cannot be denied that a farmer can get along after a fashion, with little or no capital, because it is done by thousands every year. Some may inquire how this can be possible if the foregoing statement be correct. A farmer without capital, in the first place, will not perhaps hire more than half as much labor as his farm requires; of course all his work is slighted, and all done out of season, and half crops is the consequence. When the time arrives for paying his laborers, perhaps he will get some things out of the store for them on trust, or borrow a little money to pay them in part, and put off paying the remainder until winter or spring, to the no small injury of his credit, otherwise he must force the sale of some of his scanty produce at a reduced price, to make out the pay. In the next place he buys of the store-keeper wholly on a long credit, and pays a price accordingly, say twenty to thirty per cent. more than the cash price. His dealings with the blacksmith, shoemaker, and mechanics in general, are after the same fashion. And thus he passes his life continually pinched for the want of a little money, incessantly harrassed by duns, and once in a while is appalled by a tap upon the shoulder, though gentle it may be, of the practised hand of a constable. And for this he must pay the latter, and his co-worker the lawyer, a sum of money for which he has never received any equivalent. And thus he brings the year about—no, properly speaking, he never brings the year about. He is forever toiling to bring up the arrangements of the last year. Time has got the start of him by one year, and he in vain attempts to overtake it.

It is a common remark that small farms are more profitable than large ones; this in the abstract is not true. Though it is doubtless true that multitudes of farmers greatly injure themselves by enlarging their farms *without an adequate increase of capital.* How often do we see farmers who have in the course of years accumulated a little money from small farms, barely enough to enable them to cultivate their present farms to the best advantage, invest the whole of this very capital in more land. Thus making an increase of capital necessary by the very act which deprives them of the little they already possessed. Could farmers who are without a loose capital be persuaded to pursue a precisely contrary course to this, to wit, sell off so much of the land they already possess as will raise a sufficient loose capital to enable them to cultivate the remainder in a proper manner, it would increase both their profits and comfort.

If any thing will excuse a farmer for mortgaging his farm, it is the hiring of money to work that farm. Though he ought in this case to be very certain that he is possessed of so much resolution and discretion, as to be in no danger of ever appropriating money so raised to any other use; so long as it is applied to this use only, it is not so very hazardous a plan. Before a mortgage can press heavily upon his farm, the money can be repaid, and at the worst he has only to return to his former method of farming by the halves, and without either satisfaction or profit. I do not wish to be understood as recommending to farmers the practice of raising money on mortgage. It is better with rare exceptions, where money must be raised, to sell off a portion of the farm, and preserve the remainder free from incumbrance.—H. W.—[N. England Farmer.]

SAVOY CABBAGES.—The green curly savoy cabbage is one of the finest garden vegetables that is grown, and ought to take the place of every kind of cabbage put up for winter's use for the table. It is as hardy and as easily cultivated as any other kind of cabbage; it is much more delicate, sells more readily, and as many, indeed rather more, can be grown from a square in the garden, or from an acre of land.

An acre of land has 4310 square yards—equal to 43,560 square feet: two feet wide each way is enough to plant the savoy cabbage; thus, an acre would yield 10,890 cabbages, which require as little cultivation as potatoes, after the ground is well prepared, and the plants are planted out, and which would bring, at the moderate price of one cent apiece, the enormous sum of one hundred and eight dollars and ninety cents.

LOVE OF FLOWERS.—I am accustomed to associate a passion for flowers with the warmest and kindest affections of the heart; and in passing along our streets, if I see a window filled with flower-pots, or a solitary rose bush or columbine peering above the green grass of the little door yard, in front of the lowliest dwelling, I cannot resist the belief that its inmates are happier and more refined than they who dwell in lordly halls, where these emblems of beauty and purity are wanting.

I have sometimes imagined that the mind may be purified and the affections chastened by being continually surrounded by pleasing and innocent images; and if this be true, what can better answer such a purpose than flowers? They are attainable by every individual—they are cheap, and may be made to exhibit their tints and shed their perfume at all seasons of the year. They mingle beautifully with our domestic enjoyments, and are often made the silent but inspiring companions of literary pursuits. How often have I lingered in a flower garden, contemplating its varied beauties, with that calm pleasurable emotion which is inspired by music, and were I compelled to yield up my piano or my pinks, I think I should not hesitate to retain the latter. It has occurred to me,—for a maiden's thoughts, in despite of all she can do, will now and then *run* upon such things, particularly when her companions are all *running* to the altar,—that if ever I should be married (forbid that it should be supposed that I am anxious for such an event,) I should always have a profusion of flowers in my parlor, that the sight of them might soothe and cheer my husband when he returned home, exhausted by the cares and visions of this vexatious world. I am sure such a course would make a surly man kind, and a good man better. We were told the other night, by a lecturer in the Lyceum, that it was a favorite saying of the reformer Luther, that he would admit no one to his friendship, who did not love *bread, music,* and the *smile* of a child. I should be willing to go one step farther, and add to his list, *flowers.*

I need not say that in every age, and almost every clime, flowers have been the symbols of innocence. "We decorate," says a writer, "the bride, and strew her path with flowers; we present the undefiled blossoms as a similitude of her beauty and untainted mind, trusting that her destiny through life will be like theirs, grateful, pure and pleasing. We scatter them over the shell, the bier, and the earth, when we consign our mortal blossoms to the dust, as emblems of transient joy, fading pleasures, withered hopes; yet rest in sure and certain trust, that each in due season will be renewed."

The love of these beautiful productions is deeply impressed in the human heart. We wreathe garlands around the altar—we decorate the convivial board with flowers—we plant the rose bush over the grave of our buried love—in short, these lovely creations, of nature, are mingled with all the pleasures and all the sorrows of life.

I saw, last spring, an affecting incident, strikingly illustrative of the holy associations we have with flowers. The attractive loveliness of a May afternoon carried me, with a small party of friends, to the top of one of the hills north of our city. The trees were clothed with leaves, and the ground was literally covered with the modest little wild flowers, whose "perfume," as somebody has said, "comes and goes like the warbling of music." Of these we gathered an abundance; and after entwining them with our hair, and among our bonnet ribbons, and filling our hands, we descended into the plain below. Upon our return we chanced to pass by Potter's Field. The gate was open, the old sexton being busy in tinkering at the lock. As we had, in our way to the hill, spent half an hour among the tombstones of the presbyterian and episcopal burying grounds, it was proposed by one of our

party, that we should now stroll through Potter's Field to read some of the inscriptions upon the plain stones and painted boards which were here and there raised at these lowly graves. In a distant part of the cemetery, we observed a female standing near a new made grave. Upon perceiving that we were approaching her, she left it, and by a circuitous route, passed out at the gate. I was near enough, however, to discover her wrinkles, her squalid look, her pallid and sunken cheeks. Her dress was coarse and simple—a black handkerchief upon her neck, and a faded black ribbon upon her bonnet, showed that she was a mourner. Upon approaching the grave, we found upon it a few flowers. As I stood contemplating them, I felt as though I could throw my arms around the old woman's neck, and kiss the tears from her furrowed cheeks.

As we repassed the sexton, I was prompted to inquire if he knew any thing of the old woman, and what relation she bore to the person buried in the grave she had been visiting. He knew little, save that her name was ——, and that she lived in a miserable hovel in the western part of the city; she was a widow, and the grave that of her only child—a wild reckless youth, who had contracted habits of dissipation, and who for the last year had been travelling up and down the river, engaged in gambling and other licentiousness. Two weeks before this period, he had returned from New-Orleans, sick with the small pox, and died in the miserable room in which his poor heart broken mother resided. He was buried by the overseers of the poor—and the only monument which her poverty would permit a mother's unquenchable love to rear, in memory of a recreant and ungrateful son, was that of scattering upon his lowly grave a few wild flowers.—D. V.—[Cincinnati Chronicle.]

Power of Smelling in Birds.—A small pamphlet has been put into our hands by a friend, containing an account of some interesting experiments made at Charleston, South Carolina, during the winter, for the purpose of determining certain facts in the natural history of the Vulture. The Turkey-Buzzard and the Carrion-Crow were the particular subjects of experiment, and the object was to determine whether they do in fact possess the extraordinary powers of smelling which have been so uniformly attributed to them by naturalists, and whether it is their habit to feed only on putrid meat.

Mr. Audubon was the first writer on American Ornithology, who denied the Vulture the faculty of smell, and maintained that it is guided by the eye only, in its search for food. The experiments by which he arrived at this opinion were published in 1826, and have been treated on both sides of the Atlantic, with severity, as unsatisfactory, and indeed palpably absurd. The pamphlet before us, written by Doctor Bachman, of Charleston, details a series of experiments, made for the express purpose of testing the correctness of Mr. Audubon's opinion. That gentleman was on a visit to Charleston, but took no part in them. They were witnessed by Robt. Henry, President of the College of South Carolina, Dr. John Wagner, Professor of Surgery of the Medical College of the State, Dr. Henry Frost, Professor of the Materia Medica, and C. F. Leitner, Lecturer on Botany and Natural History, in the same institution, Dr. B. B. Strobel, and Martin Strobel, Esq. all gentlemen of eminent standing and capacity. They have unanimously signed a certificate, stating that from the experiments they have witnessed on the habits of the Vultures of Carolina, called the Turkey Buzzard and the Carrion Crow, they "feel assured they devour fresh as well as putrid food of any kind, and that they are guided to their food altogether through the sense of sight and not that of smell."

The result, besides its bearing on a material part of natural history, is a gratifying testimony to the scientific accuracy of Mr. Audubon, and a sufficient defence against the illiberal sneers with which his discovery has been treated. The experiments detailed show not only that those birds are without any particular strength of smell, but that they are destitute of the sense altogether. Among other proofs of this, it was found that they were attracted by coarse pictures of dead animals, and were unable to perceive flesh, which was only hidden by a piece of canvass, although standing upon it at the time. The experiments were varied in such a way as to make it impossible there should be any mistake. There can be no doubt that with respect to this part of the Vulture family, the opinions that have prevailed for so many centuries are erroneous.

Among the experiments was one to test the story, published lately,—that if the eye of the turkey-buzzard was put out by perforation, it would be restored, and the sight renewed by putting the head under the wing, the down of which was said to perform the miracle. They found that the ball of the eye is refilled, but the sight was not restored. They found, also, that a blind bird cannot perceive the most offensive animal substance, however near.—[Baltimore American.]

Anatomy of the Horse's Foot.—The horse, a native of extensive plains and steeps, is perfect in his structure as adapted to these his natural pasture grounds. When brought, however, into subjection, and running on our hard roads, his feet suffer from concussion. The value of the horse, so often impaired by lameness of the foot, has made that part an object of great interest; and I have it from an excellent professor of veterinary surgery to say, that he has never demonstrated the anatomy of the horse's foot without finding something new to admire. The weight and power of the animal require that he should have a foot in which strength and elasticity are combined. The elasticity is essentially necessary to prevent percussion in striking the ground; and it is attained here, through the united effect of the oblique position of the bones of the leg and foot—the yielding nature of the suspending ligament, and the expansibility of the crust or hoof. So much depends on the position of the pastern bones and coffin bone, that, judging by the length of these and their obliquity, it is impossible to say whether a horse goes easily, without mounting it. When the hoof is raised, it is smaller in its diameter, and the sole is concave; but when it bears on the ground it expands, the sole descends so as to become flatter; and this expansion of the hoof laterally is necessary to the play of the whole structure of the foot. Hence it happens that if the shoe be nailed in such a manner as to prevent the hoof expanding, the whole interior contrivance for mobility and elasticity is lost. The foot in trotting comes down solid, it consequently suffers percussion; and from the injury, it becomes inflamed and hot. From this inflammation is generated a variety of diseases, which at length destroy all the beautiful provisions of the horse's foot for free and elastic motion. The subject is of such general interest, that I may venture on a little more detail. The elastic or suspending ligament spoken of above passes down from the back of the cannon bone, along all the bones to the lowest, the coffin bone; it yields and allows these bones to bend. Behind the ligament the great tendons run, and the most prolonged of these, that of the perforans muscle, is principally inserted into the coffin bone, having at the same time other attachments. Under the bones and tendon, at the sole of the foot, there is a soft elastic cushion; this cushion rests on the proper horny frog, that prominence of a triangular shape which is seen in the hollow of the sole. The soft elastic matter being pressed down shifts a little backwards, so that it expands the heels, at the same time that it bears on the frog, and presses out the lateral part of the crust. We perceive that there is a necessity for the bottom of the hoof being hollow or concave—first to prevent the delicate apparatus of the foot from being bruised, and, secondly, that elasticity may be obtained by its descent. We see that the expansion of the hoof and the descent of the sole are necessary to the play of the internal apparatus of the foot. That there is a relation between the internal structure and the covering, whether it be the nail, or crust, or hoof, we can hardly doubt; and an unexpected proof of this offers itself in the horse. There are some very rare instances of a horse having digital extremities. According to Suetonius, there was such an animal in the stables of Cæsar; another was in the possession of Leo X.; and Geoffrey St. Hilaire, in addition to those, says, that he has seen a horse with three toes on the fore foot, and four on the hind foot.* These instances of deviation in the natural structure of the bones were accompanied with a corresponding change in the coverings—the toes had nails, not hoofs. By these examples it is made to appear still more distinctly, that there is a relation between the internal configuration of the toes and their coverings; that when there are five toes complete in their bones, they are provided with perfect nails—when two toes represent the whole, as in the cleft foot of the ruminant, there are appropriate horny coverings—and that when the bones are joined to form the pastern bones and coffin bone, there is a hoof or crust, as in the horse, couagga, zebra, and ass. —[Bell's Bridgewater Treatise.]

* Such a horse was not long since exhibited in town and at Newmarket.

Patent for a Thrashing Machine: James Hart, and Waller S. Holladay, Spottsylvania, Va., September 17.

This patent is taken for the manner of constructing the cylinder and concave, which is as follows: A square bar of iron is to form the shaft of the cylinder; the gudgeons, of course, being rounded. Flat bars of iron, from sixteen inches to two feet in length, are to have square holes made through their centres, so that they will slip on to the shaft. One of them is to be put on, and against it a circular piece of plank, four inches less in diameter than the length of the bar, leaving the latter to project two inches, to form teeth, or beaters; the plank, by its thickness, regulating the distance of the teeth. A second bar is to be placed against this plank, at right angles to the former, then another plank and another bar, until there are enough for the length of the cylinder. For the sake of greater firmness the bars are let into the plank; and to keep the whole together, four screw bolts are to pass from end to end of the cylinder, through the plank and bars. The concave is to be placed above the cylinder, and to be formed of plank, with projecting teeth, on the same principle.

There is no claim made, but as the whole description consists in the manner of constructing the cylinder and concave, the object of the patent is sufficiently apparent.

Patent Thrashing Machine: Linus Yale, of Otsego, and Philo C. Curtis, of Utica, Oneida county, N. Y., September 17.

The concave is to be a semicircular trough of cast iron, supported on suitable legs, and having rows of teeth projecting from its interior. The cylinder is to be made by bending round, and brazing, or riveting, sheet iron of one-eighth of an inch in thickness. This is to be set with teeth of iron, or steel, and to have wooden or iron heads to receive a shaft, which revolves in boxes at the ends of the semicircular concave.

The claim is to the cast iron frame, the sheet iron cylinder, and the form of the spikes, or cogs, and manner of fastening them into the cylinder.

The undevout astronomer is mad.
[Young's Night Thoughts.]

LEARNED MEN.—*Mr. Fleet:* I agree with Dr. Young, in this sentiment above quoted. The man that can view the planetary system, see the globes launched into infinite space, and all their motions regulated with such accuracy that they return to the same fixed state at an instant of time, producing all the variety of seasons, and measuring time with an exactness altogether incomprehensible to us; when we extend the idea, and consider every fixed star as a sun, the centre of motion to a planetary system as large or larger than our own: when we imagine that fixed stars have been created, whose light, though travelling at the rate of 8 miles per second, has not even had time to reach our earth: then we may well say with Young, "the undevout astronomer is mad." When we contemplate the omnipotent being watching over the minutest particle of his creation, and recollecting the motions of a universe, we cannot but be filled with admiration, love and gratitude: the uncultivated mind is grovelling in the dirt, and capable of every meanness, and lives truly without God in the world. It was therefore with surprise that I read the article in the Farmer, for February, inculcating the fear of learned men, lest they might prove *arch-angels ruined!* I hold.

The best blood by learning is refined, and that ignorance is father and mother of crime. RATIO.

March 4, 1834.

REMARKS.—On what page is such a sentiment advanced?

TO DESTROY CATERPILLARS.—*Mr. Fleet:* If you think this worth insertion in your paper, it is at your disposal.

To destroy worms or caterpillars on fruit trees, take a gimblet and bore a hole about one-third of the way through the body of the tree, and then fill up the hole with the flour of sulphur, and plug up the hole tight. This will inhale through the tree in the sap. This should be done just as the leaves begin to put forth, and it will kill the worms as soon as they begin their work of destruction. I have tried it and found it worth my trouble.

O. G. BUTTS.

REMARKS.—The above is not new; but the effect assigned to the sulphur has been denied. Now is the season to repeat the experiment.

CHARCOAL.—*Mr. Fleet:* Take half a bushel of charcoal, reduce to fine powder, mix with it 2 gallons of molasses, and bury it near the roots of any tree, the molasses will dissolve, but the charcoal will remain for years. Again, take the same quantity of fresh dung and bury in like manner, it will soon disappear. From this I argue, that the dung is converted into carbonic acid gas, by the putrid fermentation, and either absorbed by the tree or thrown into the atmosphere, affording food to other plants; but the charcoal is incapable of fermentation, and is not absorbed by the plants growing near it, although their roots are in contact with it. From this I infer that carbon must first be reduced to its elementary state before it can be taken in by plants, and assimilated chalk and charcoal afford no food to plants, because they are incapable of fermentation, although both abound with the carbonic principle, but cannot yield it to vegetables in any shape in which they can receive it. From this I conclude that vegetables receive little or no food by their roots. R. M. W.

March 21, 1834.

FISH IN THE CANAL.—*Mr. Fleet:* Some years ago I was on a visit at Palmyra, and was told that the canal in that vicinity abounded in clams and many varieties of scale fish, of all sizes and ages, but mostly young and small. Now I would inquire by what means this canal is supplied with shell and scale fish? Are the waters which are supplied by the various fœtus supplied with fish spawn diffused in the water like the pollen of vegetables in the atmosphere? RATIO.

FISH SPAWN.—*Mr. Fleet:* One of my neighbors some years ago put 6 pikes, male and female, in his mill pond, and now at the distance of 4 years the streams below the mill pond abound with pickerel. Query—How came these pickerel to abound in our stream, the old pike still remain in the mill ponds and their spawn only can have been carried down by the stream? RATIO.

March 24, 1834.

OYSTER SPAWN.—*Mr. Fleet:* To the south of Cape Hatteras, and as far south as the Cape of Florida, the coast is lined by a salt marsh from 5 to 10 miles wide, covered with a coarse salt grass very similar to our sedge; through this marsh are numerous narrow deep channels, forming inland passage, and this marsh is covered at high water about 6 inches; at certain seasons the waters of these creeks are ropy with oyster spawn, which lodges on the grass, and numerous small oysters are produced every summer, which fall in winter and are renewed annually.

Query.—Is the spawn of fish (scale and shell fish) diffused in water as the pollen of vegetables in the atmosphere? It would seem so to me. RATIO.

March 24, 1834.

ON SUCKERING CORN.—I had the pleasure, about four years ago, to spend a day in company with old Mr. Macon of North Carolina, when our conversation was principally on subjects of agriculture; and among others, the cultivation of Indian corn. After having inquired whether I had the suckers which grew from the roots of the corn pulled off, as is the common practice, and received my answer in the affirmative, he informed me that he had suffered them to remain, having, from repeated experiments, ascertained that they did not injure the corn; but on the contrary, the suckers more frequently than otherwise produced good ears of corn; and that if they failed to do so, there was an increase of fodder. I have since tried the experiment, and witnessed the following results. That after carefully examining the ears of corn on the stalks producing suckers, they were found to be as good as the ears on the surrounding stalks not producing them—that a large majority of the suckers produced good corn, though the ears generally were smaller than those on the mother stalk, and that (of course) there was an increase of fodder. Without entering into an inquiry, whether corn ought not to be planted so thick as to prevent its producing suckers, (if thick planting will prevent it, of which I am not sure,) or whether the pulling them off may not injure the corn, by inflicting wounds on the stalks, I can now safely recommend Mr. Macon's practice, as saving the time and labor of pulling off suckers, and what is of more consequence, as producing an increase of the crop of corn and fodder. I ought to add, that none but the suckers growing from the root ought to be suffered to remain.—W. M. WATKINS. Charlotte county, March 20, 1834.—[Farmers' Register.]

CULTIVATION OF VINES, Cucurbita ceæ.—Lay out your ground in hills four and a half feet asunder, each way, raising them considerably above the natural surface of the ground, with the hills inclined towards the south. Having prepared your hills you are ready to commence planting. Distribute no less than ten or fifteen seeds in a hill, covering them one quarter of an inch in depth. As soon as the plants have made their appearance, take of ashes or soot two parts, plaster one part, pulverized charcoal one part, mix these ingredients together, until the mixture is well incorporated. With this composition enter your garden or field, in the morning, while the dew is on, and with a quantity in your hand throw it over the plants, dusting them as much as possible, in order to suffocate the insects, taking particular care to dust the under part of the leaves.

By following these directions you will have the pleasure of seeing your plants in a thriving condition, and in a few days entirely out of the way of these troublesome insects.

As soon as the plants begin to interfere with one another, commence thinning them out. Pull out all but two or three in a hill, leaving those that look the most promising. There are many persons who leave no less than half a dozen in a hill; this is a *mistaken notion*, for I am confident that could you rest assured that no worms would molest the roots, it would be better to pull all out but one; and I am fully persuaded too, that you would gather more fruit from the vines where there was but one or two plants in a hill, than you would were you to leave half a dozen.

Where you leave too many, the vines will become so thick that, when they set for bearing, most of the fruit will decay before it comes to any maturity.—MILES BEACH. N. Lebanon, March 20, 1834.—[Goodsell's Far.]

THE COMMON FOWL AND PHEASANT.—In the autumn of 1826, a wanderer of the pheasant tribe made his appearance in a small valley of the Grampians, the first of his family who had ventured so far north in that particular district. For some time he was only occasionally observed, and the actual presence of this *rara avis* was disputed by many: wintery wants, however, brought him more frequently into notice; and, in due season, proofs still more unequivocal became rife. When the chicken broods came forth, and began to assume a shape and form, no small admiration was excited by certain stately, long-tailed, game-looking birds, standing forth amongst them, and continuing to grow in size and beauty, until all doubts of the stranger's interference with the rights of *chanticleer* effectually vanished. These hybrids partake largely of the pheasant character; and as they are of a goodly size and hardy constitution, a useful and agreeable variety for our poultry yards may be secured in a very simple and economical manner.—A. F.—[Journal of Agriculture.]

Texas Emigratory Society.—A company of over one hundred persons, composed of farmers, mechanics, physicians, &c. (all cold water men,) sailed from this port for Texas, on the 1st of May, to establish a colony in that country. They request donations of books, and any other articles, from the benevolent, which may be left at the office of the Seaman's Friend Society, 98 Nassau street.—[Com. Adv.]

Tarragon is a fragrant, aromatic, perennial plant, cultivated in gardens, and used to impart a pleasant flavor to different dishes; to mix with salads, and for flavoring vinegar.

The common mode of increasing this plant is by dividing the roots.

The stalks grow from two to four feet high, and bear a strong resemblance to the common golden rod of the fields. One bunch is sufficient for a garden.

Rye in the Grain, as Food for Horses.—A friend, in whom I have every confidence, who is a gentleman of scientific acquirements, and a practical agriculturist, has just given me the following information, relative to horses' feed.

While travelling recently on one of our public roads, he fell in company with a farmer, from one of the northern counties of Virginia, and in the course of conversation the subject of feeding horses was mentioned; when the farmer observed, that for four yaars past he had pursued a new plan, greatly to his advantage, as well as to that of his horses. The new plan was that of feeding rye, in the grain, without grinding. He said, that after four years experience, he had become perfectly satisfied that less rye produced a better effect than if it were chopped or ground. After much difficulty, he had prevailed on some of his neighbors to try it; and thus, gradually, all the horse owners in his neighborhood had become converts, and now all fed rye in the grain; all agreeing that a large proportion of grain was saved by it, besides a marked difference in the condition of the horses for the better. He said, he could not give the "why and because;" it was different from the universal prescription of science, and the almost universal practice of intelligent husbandmen; but that the fact was before him, and challenged his belief in such a way, that to have continued incredulous, would have been to shut his eyes against the most palpable demonstration. The best of this is, that an experiment is easily made, and, even if unsuccessful, cannot result in material loss. But should it prove to be true, that rye in the grain is better, or even as good as when ground, a considerable saving would result to the farmer, in avoiding the trouble and expense of going to mill. The farmer stated, that he had observed grains of rye passed off in the dung, but that they seemed to have left their substance in the body of the horse. In this he is doubtless mistaken; but may not the *modus operandi* of this new diet be explained thus: The grain that escapes crushing by the teeth prevents the mass in the stomach from concreting into lumps, and thus permits the free action of the juices of the stomach upon the whole. Persons afflicted with dyspepsia swallow white mustard seed, with great advantage; but I believe it is not pretended that the mustard seed has any other action than a mechanical one—that of keeping the contents of the stomach from forming a dense mass; keeping the food light and penetrable by the gastric juices, &c.

The anecdote was given to me in so earnest a manner, and by so respectable a gentleman, that I thought, as I was about writing to you, I would give it to you for insertion in the Farmers' Register. Very respectfully. Gideon B. Smith.—Baltimore, March 15, 1834.—[Farmers' Reg.]

Lime.—Thomastown, in Maine, is by far the greatest manufacturing town in America for this useful and indispensable article in building, furnishing the very best of its kind. No less than 300,000 casks are annually exported from this town. The inspector has 3-8 of a cent per cask, amounting on the smallest number to more than $900.

Farinaceous Aliment obtained from Straw.—The attention of agriculturists in France has been recently directed to the discovery of a method of converting straw into a kind of bran, or *farine*, for the feeding of domestic animals. This discovery has been claimed by two individuals; the first is a miller near Dijon, of whose name we are not informed, who, it is said, on trying the millstone of a new mill, discovered the possibility of converting straw into nourishing food; the second is M. Joseph Maitre, founder of the fine agricultural establishment of Vilotte, near Chatillon. This distinguished agriculturist, known for the purity and perfection of his breeds of sheep, conceived the idea of converting into farine, not only the straw of wheat and other grains, but of hay, trefoil, lucern, santfoin, &c. His efforts are said to have been perfectly successful, and his discovery arrived at, not by chance, but by long experiment and research. The aliment which he has produced is said to be a complete substitute for bran. It is given to sheep and lambs, who consume it with avidity, and may be given to all other graminivorous animals as a grateful and substantial food. M. Maitre, with the view of bringing the process to perfection, has ordered a mill for its manufacture to be erected in the midst of his large farms; and he is preparing to communicate a report to the Royal Society of Agriculture, on the advantages in rural and domestic economy to be derived from this preparation. We are not, at the present moment, informed of the nature of this process. If it be a simple grinding of the straw, or fodder, and a separation of some of its fibrous matter, we can easily imagine the advantages that may result from it. We know, in this country, that the mere chopping of straw adds greatly to its powers, by facilitating mastication and digestion. We may believe that a more perfect communication of its parts will produce a corresponding effect, and extend very widely the uses of straw and other fodder, as a means of feeding our domestic animals.—[Quarterly Journal of Agriculture.]

Protecting Young Trees against Swine.—Dr. Dean, in his New England Farmer, after speaking of the great advantages of pasturing swine in orchards, adds, "when the trees are young, the swine will be apt to injure them by tearing the bark." We have been in the practice of planting out young trees, however, in an enclosure where not less than twelve or fifteen hogs continually pasture, and we meet with no such accidents or injuries. It is not owing to our swine being better bred than others, or that they have acquired any higher moral tone. Their love of mischief is occasionally exhibited, but not against our young trees. These they never touch, always keeping at a safe, and commonly at a respectful, distance. The secret (if such it be) is soon told. We only tie fast to the tree two or three stems of the sweet briar in an upright position.—[Gen. Far.]

Labor is Honorable.—The following paragraph, extracted from the message of Governor Davis to the legislature of Massachusetts, is highly creditable to its author:

"While we continue to respect labor—while we look upon it, as it is, the great element that imparts to our country a growth which errors in public policy can scarcely check, and to our institutions their overpowering strength; while we hold it to be meritorious and honorable, instead of servile; while we cling to the purity and simplicity of life, which belongs to this condition, instead of degenerating into the follies, the vanity and false hopes, which overgrown wealth often begets; while we pursue a policy that will give to this labor the most ample scope and encouragement in all its various occupations, we shall have little occasion to entertain apprehension for our free institutions, if we also continue to provide liberally for the culture and improvement of the mind."

Sorrel Sauce.—Wash a quantity of sorrel, and boil it tender in the smallest quantity of water you can: strain and chop it; stew it with a little butter, pepper, and salt; and if you like it high, add a spoonful of gravy.

Be careful to do it in a very well tinned sauce-pan; or if you have a silver one, or a silver mug, it is far better, as the sorrel is very sour, especially in spring.—D. C.

Indigo of Africa.—*The Niger Expedition.* A friend in Glasgow informs us that, stimulated by reports of the extreme cheapness of those staple articles, ivory and indigo, at Rabba, and other encouraging mercantile news, and also by higher motives, the design of sending out another Niger expedition is contemplated by an association of Glasgow merchants. This patriotic undertaking is, we have reason to believe, actually in progress. Never, indeed, was there a more favorable opportunity than is now offered for penetrating into the unknown regions of Africa, to explore the magnificent Lake Tshad, and correct the geography of the central parts of this interesting continent—left vague and incorrect by Herodotus, Pliny, Ptolemy, Leo Africanus, and all the Arabian authorities.

The African indigo is, we are assured by competent judges, who have examined specimens of it on the coast, superior to that imported from the East Indies; and this accounts for the beautiful blue dye and brilliant color of the native clothing. We are convinced that eminent benefit to the trade of England may speedily result from this alone; but when we add that its prime cost on the Niger was not three half-pence per pound, and that the ivory was less than two pence, we have said enough to awaken the spirit of commercial speculation to a pursuit which promises such returns.—[London Lit. Gaz.]

[From the New-England Farmer.]

WORCESTER AGRICULTURAL SOCIETY.—At the annual meeting of the Worcester Agricultural Society, holden at the Exchange House in Worcester, on the 17th inst. the following officers for the present year were elected:

President, Levi Lincoln; 1st Vice President, Aaron Tufts; 2d Vice President, Silas Holman; Treasurer, Theophilus Wheeler; Corresponding Secretary, Oliver Fiske; Recording Secretary, Wm. D. Wheeler.

It appears by the account of the Treasurer, exhibited at this meeting, that the funds of the Society now amount to $7,495 31, of which sum $3,000 is in bank stock, and the remainder in good notes well secured. The renewal of the grant from the State for the encouragement of agriculture enables the Society to continue their cattle shows and exhibition of manufactures, and a list of premiums to be awarded next autumn for the best of the products of the farms and workshops of the county of Worcester, will soon be published by the trustees. Neither shall the ladies be neglected or forgotten. The society considers itself much indebted to the fairer part of the community for the interest and embellishment of their shows —and knowing that they are never weary in well doing, the Society with confidence call upon the ladies *not to forget us next fall.*

The Society would make an earnest appeal to *all* the present members, individually, to endeavor, by removing prejudices, if there are still any existing, and by the use of all proper measures, to increase their number, and thereby their means of usefulness, in the promotion of the objects of the Society. They confidently believe the Society has done much good. It is their desire to augment the number and amount of premiums. This can only be done by increasing the amount of their funds. And the yeomanry of the county are invited to join us in our endeavors to promote the interests of agriculture, manufactures and the mechanic arts, by giving the Society their names, and their influence.

By order of the Society.

April 19, 1834.

Massachusetts Horticultural Society—Exhibition of Fruits.

Saturday, April 26.

By Mr. Hoyt, of Gilford, N. H., Russet Apples from a tree raised by him from seed, a fruit of medium quality, valuable for their late keeping.

By Joseph Morton, Esq., of Milton, Tolman's Sweeting, fine and productive for the table and baking.

By D. Fosdick, Esq., of Charlestown, Sweetwater Grapes preserved in oak saw dust; they were in a good state of preservation, and the flavor equal to the imported grape.

For the Committee.

ROBERT MANNING.

BRIMSTONE FOR CATTLE.—Dr. Bartlett: It is probably not known to many of our farmers that brimstone is valuable for cattle in keeping them free from ticks. These vermin are not only filthy in their appearance, but an injury to the cattle. A piece of brimstone as large as a grain of corn, well pulverized, given in a little salt, will cause them to drop off, and prevent others from getting on for eight or ten days. I consider brimstone as necessary for a cow in the summer, as salt.—[South. Plan.]

HOW TO DESTROY MOLES.—Dr. Bartlett: In the last Planter it is stated that the Castor Bean will destroy Moles, I have tried the red Palma Christi (which some say is the same,) with success, merely by planting a few of the kernels in their paths or ploughed places; also calomel, by making holes in grains of corn, and inserting it in the holes and placing the corn in the ground for them. The calomel will not kill them till there comes a rain, when they will be found on the top of the ground.—WM. H. RAIFORD.—[Southern Planter.]

NOTHING MADE IN VAIN.—We have this week received the following communication, accompanied with a quantity of seeds, as referred to, for which we return the donor our thanks. From the date, we have no doubt but they were intended to have reached us earlier. The discovery of this way of procuring maple seeds is not only a matter of curiosity, but of economy; as we venture to say that it would have required the labor of one man at least one week, to have taken the shells from a quantity of seeds equal to those sent to us. We shall endeavor to have them planted, and will hereafter give the result.—[Goodsell's Genesee Farmer.]

Cultivation of the Sugar Maple and manner of procuring the Seed.

Mr. Goodsell,—Every one is delighted to see our native forests thickly planted by the hand of nature with this valuable and beautiful tree; valuable, because for cabinet work some varieties of this wood are superior to that brought from distant climes; first rate for fire wood, and as good for the manufacture of sugar as the cane plant. And who does not regret the destruction of the ax-man amongst them. Occupying the best soil, they are usually the first victims. But he who destroys should endeavor to produce anew. No native tree can be more easily cultivated than this, the seed being abundant and easily procured. It grows rapidly from the seed in open cultivated grounds, attaining the height of six feet in three years, and in twelve years the stems will measure from six to nine inches diameter. I send you a quantity of seed as a specimen; they are ready prepared for sowing, and are divested of the shell and wings; in their natural state, being connected together in pairs, they are usually called maple keys. About a peck is sufficient for seeding three acres of ground. Nature would seem to dictate the fall of the year to be the proper time for sowing the seed in their natural form, as the effects of the frost would be to soften the shell. At this season they are scattered abroad by the winds in infinite profusion. But divested of the shell and sown in the spring they will grow as surely as peas, and make their appearance at the time the forest trees put forth. They should be sown, or rather scattered upon the furrows of dry land, and harrowed in, and grass seed should be sown for future pasture. Hogs, calves, sheep, horses, &c., may be pastured among them, but no cattle, till they are out of danger. The third year, either fall or spring, they should be taken up, where too thick, and transplanted in vacancies. One thousand may commence growing upon an acre. In twelve years, an enterprising farmer, who wishes for the future prosperity of our country, as well as to enhance the present value of his lands, would walk five miles barefooted before sunrise in the month of June, to view the "sugar bush" of our climate, in full foliage, situated near the residence of the owner, sheltering his fruit trees and habitation from storms, and the resort of the songsters of the air. The leaves of the grove might be collected for the barn-yard At the age of twenty-five years, the trees might be tapped. I was bred upon a farm, in a deep valley of the mountains, on the eastern border of this state, and have witnessed the growth of the sugar maple in groves from the seed, and also standing singly in fields, where they have stood for more than half a century, presenting a more beautiful appearance than the trees of any land or clime. My occupation now is farming. As to the manner of procuring seed: I send you about one-fourth part of the winter store of a buck or wood-land mouse, which was deposited in a living hollow beach tree, 15 inches diameter; the whole of his store, being about one bushel, one half beach nuts, with a few other seeds, all shelled, and neatly put up for winter provision, and a nest within, lined with down, the residence of the family. A boy found another store-house the same day, which was 25th of December last, containing half a bushel of maple seeds, with others. Boys are skillful in such kind of hunting. In this way seed stores might be furnished with them from the maple forests of the west, in quantities sufficient to plant out territories and kingdoms. The buck mouse enters his habitation through a smooth hole an inch or less in diameter, into the hollow of the tree, sometimes nearer and sometimes further from the ground. At the commencement of cold weather and snow, the red squirrel visits the place daily, and endeavors with much chattering to gnaw through, to rob the mouse of his store. By this recent gnawing around the hole, and by tracking in the snow, the habitation of the mouse may be discovered. This little animal, also deposits vast quantities of elm seeds, in hollows of the branches and trunks of that stately tree. In the night season, when all his enemies sleep, except the owl, he is busily employed during the fall months, in running up and down the tree, and laying up his winter store. The habitation of the mouse is frequently occupied afterwards by the honey bee. Whenever the maple bears seeds, the mouse, in maple forests, is sure to have a proportion of them for his food. S. H.

Clarendon, Jan. 25th, 1834.

POSTS.—The Maine Farmer states that Mr. North, of Augusta, several years ago, set two posts near the river. One was butt-end up, the other butt-end down. Both were equally sound when put into the ground, and now the one with butt-end up is sound and good, while the other is decayed.

INLAND NAVIGATION.—From the New-York Observer, we make an extract from the proceedings at the recent anniversary of the Seamen's Friend Society.

Mr. Peet, in moving the second resolution, presented an interesting statistical view of the canals, rivers, lakes, and inland navigation, of the great west. In New-York alone, he said, the canals now completed and in operation extend 500 miles through a populous country, having on their banks 100 villages and cities, and bearing on their bosom 1,800 boats, navigated by between 10 and 12,000 men. The great lakes were also navigated by numerous large vessels, the number on lake Erie alone being 170, including 30 steamboats. Passing through these lakes, and the Ohio canal, on which the number of boats and boatmen is increasing with great rapidity, we come to the river Ohio, which stretches a thousand miles through a fine country to the Mississippi, the father of rivers, with its twenty-three tributaries, affording navigation for 8000 miles in various directions. The whole line of inland navigation in the United States, including canals, rivers, and lakes, Mr. P. estimated at 20,000 miles, and the whole number of boats employed on these waters at between 6 and 7,000, viz. 4,000 flat boats, 2,000 canal boats, between 3 and 400 steamboats, and 200 sloops and schooners. The number of men employed in inland navigation is 60 or 70,000, and the number of passengers transported annually is more than 200,000. Through nearly the whole extent of this immense line of navigation, Mr. P. said, the sabbath is shamefully violated. With few exceptions the arrangements of men of business were such as to require the labor of the boatmen and others connected with inland navigation on the Sabbath, as on other days, and thus they were deprived of the opportunity of receiving religious instruction, and the way was prepared for the introduction of every species of immorality.

TO TAKE OUT INK FROM MAHOGANY.—Wet a piece of blotting paper, rolled into a ball, and rub the table with it. Afterwards rub the places where the ink was with a dry cloth.

CREAM OF TARTAR, rubbed upon soiled white kid gloves, cleanses them very much.

Effects of Opium in China.—Our Indian subjects will be more likely to succeed in conquering China by the demoralizing effect of opium than we should by force of arms. The horrible scenes described by M. Gutzlaff are most appalling. Mr. Majoribanks says the palace of the Viceroy of Canton was burned down by the opium pipe of his secretary; that the Emperor's eldest son died from excessive indulgence in the use of it; and that all persons of wealth are addicted to it. To such a pitch has the smuggling trade arrived, that one of the Viceroys recommended it should be legalized. It is said that the amount paid for this deleterious drug is nearly four millions sterling a year, mostly from Bengal. If once legalized, the poppy, like tobacco, will be universally cultivated, all ranks will become enervated and reckless, and the western mountaineers, recently and perhaps still in a state of rebellion, will once more conquer and overcome China.—[English Quarterly Review.]

Proclamation against Locusts.—The provinces of Hoo-kwang were, some time since, attacked by these destroyers; and, as they were found to be moving south it was feared that the provinces of Quang-si and Quang-ton might also be visited—this has lately come to pass. As soon as their march brought them near the borders of the province, the viceroy issued a proclamation against them, in very strong terms, warning the people of their destructive habits, and the necessity that existed for at once destroying them. His excellency observes, that having made diligent inquiry into their habits, he finds that they stop to feed three times a day; after which, being tired and sleepy, they may be easily destroyed—if this be not done, each one will, the next day, be ten thousand, &c. We know not whether his excellency's description of the habits of this insatiable scourge be correct. Some of the saints of the Roman calendar took on themselves, in former years, to excommunicate these insects; and we have no doubt but the Foo-yuen's proclamation will have equal effect. Specimens of the insect are to be seen in the shops in Canton; they are of unusually large size, of both the brown and green kinds. They made their appearance last year in great multitudes in most of the northern provinces of China.—[Canton Register.]

Quick Silver in Trees.—On reading the following paragraph, in the Genesee Farmer, the thought occurred to us that the infusion of mineral or vegetable preparations into the circulation of the sap of peach trees, infected with the yellows, might be attended with good effects.

"Mr. Garrigues states that a plum tree in his vicinity, which had for several years dropped all its fruit prematurely, had, since a hole had been bored into it, and a quantity of quick silver deposited therein, ripened its fruit, which had been so abundant as more than to supply the family of the owner."

White Mulberry.—Experience and observation have demonstrated that the shade of mulberry trees is not injurious to the growth of grass, grain, or any other vegetable. This is an important discovery, and argues powerfully in favor of the means of raising silk.

I would advise, with humble deference, that every farmer procure mulberry seed, form a nursery, transform all his fences into mulberry hedges, and plant standard mulberry trees along all those hedges half a rod distant from each other. A farm of a hundred acres, fenced as above advised, would in a few years yield from the fences a crop worth several hundred dollars! These fences would be as cheap as any other a farmer could erect, would require no repairs, no renewal, so that all the produce arising from the leaves would be a clear profit. One hundred pounds of leaves would produce, in this country, one pound of reeled silk, if judiciously fed, worth from four to seven dollars—the price being governed by the good or bad reeling. A single tree will produce from thirty to sixty pounds of leaves, depending on the growth of the tree, soil, &c.—[Village Record.]

Flesh Colored Clover and Italian Rye Grass.—I sowed last August, after wheat harvest, on ground well prepared, four pounds of the seed of *Trifolium incarnatum*, or scarlet flowering clover, (not flesh colored, as brothers Prince and Fleet will have it,) and six pounds of the new Italian rye grass, transmitted by Mr. Le Ray from France. This was the time it was directed to be sown in order to produce an early spring crop of hay. They both came up well, and looked vigorous in the autumn, and I anticipated much pleasure from an abundant crop. But, alas! how sad has been my disappointment. The winter has apparently destroyed every plant.

I do not, however, deem this experiment conclusive as to the hardiness of these grasses. The winter has been very unfavorable to many of the humble plants, either from the want of snow to protect them, or from the ground not being frozen when the early snow fell. Verbenas, strawberries, clover, and lucern, have suffered more in the past than during several preceding winters. Trees and shrubs, even of the tenderest species raised among us, have withstood the winter uncommonly well. As some of the rye grass seed was distributed in Jefferson, and a few pounds given to my friend Dr. Beekman, of Kinderhook, which I believe is yet to be sown, I am anxious to learn the result of other experiments to cultivate this grass, as from the accounts from Germany and France, of its productive quality, we had reason to expect in it a valuable acquisition to our grasses.

While I write (April 27,) the peach and plum are nearly in full bloom, and the blossoms and foliage completely enveloped in snow, with the thermometer at 26 degrees. It has snowed with some intervals for twelve hours. The ultimate effect of this severe weather upon the expanding blossoms remains to be seen, though I am disposed to believe it will not prove fatal to the fruit. J. Buel.

Remarks.—The above is from the Genesee Farmer. All the English writers, which we have seen, except one, call the above clover flesh colored. The specific name, incarnatum, is derived from the Latin word signifying flesh. From the above experiments, and others which Mr. Buel has heretofore reported, we are inclined to think a portion of his grounds at least is unfavorable for the preservation of plants through unusual winters. Is Mr. B. of a different opinion?

Awful Calculation.—An ingenious, authentic, and valuable statistical work, published a few years since, states that the number of inhabitants who have lived on the earth amount to about 36,627,843,275,846. The sum, the writer says, when divided by 3,096,000, the number of square leagues of land on this surface of the globe, leaves 11,820,698,732 persons to each square league. There are 27,-864,000 square miles of land, which, being divided as above, gives about 1,314,522,076 persons to each square mile. Let the mile be reduced to square rods, and the number he says will be 1,853,500,000, which, being divided as above, gives 1,283 inhabitants to each square rod, which rod, being reduced to feet and divided as above, will give about five persons to each square foot of terra firma on the globe. Let the earth be supposed to be one vast burying ground, and, according to the above statement, there will be 1,283 persons to be buried on each square rod, capable of being divided into twelve graves: it appears that each grave contained 100 persons, and the whole earth has been one hundred times dug over to bury its inhabitants—supposing they had been equally distributed! What an awful, overwhelming thought! What a lesson to the infatuated being who has centered all his hopes and affections upon the evanescent pleasures of this truly transitory life!

Industry.—Those who have been trained to habits of industry enjoy life more than those that are indolent. The former are always seeking something to do; the latter are restless, work not being pleasant, and rest not being truly relished. The life of an inactive lazy man is unseasoned, very insipid, and unpalatable.

Economy.—He who saves in one way, that he may enjoy his savings in a more rational one, is the true philosopher: he will do good while living, and be remembered with respect when dead.

Politeness and Cleanliness.—These two have so much resemblance to virtue that they are often taken to be her sisters. They are all very lovely, particularly when they pre-eminently grace the fair sex.

Neatness.—This, too, is a lovely little creature, always at home, in her proper place—never ruffled by angry commotions—quiet and modest, very much resembling a young Quakeress.

Innocence.—When we see a white Japan rose, in shape of a full moon, with petals lying regularly over each other, we then think we see an emblem of innocence, neatly enrobed in the purest white.

Cleanliness.—That housekeeper who keeps the stoop clean, and every thing about the door in nice order, will set every one looking for the shoe scraper when about entering the house. One of the best seasonings to all articles of cookery is cleanliness.

Singing.—Are there more than two classes of animated creation that sing—men and birds? Of the former who sing, are they, more generally, those of pleasant and cheerful dispositions? Do eagles, hawks, owls, and other flesh eating birds, ever sing; or those only that live on vegetable substences? Are there as many singers among the English as among the French?

Political Consistency.—How very zealous many are to sustain liberty by party attachment, and yet practise thousands of things that tend to destroy law and liberty. They weaken and render insecure the flood-gates, and when they in consequence burst open, these men set themselves up as friends to their country. A vicious man is a poor patriot.

National Wealth.—Who promote national prosperity? Those who promote virtue and religion.—Who destroy it? Those who encourage the vicious, either by example or precept.

The Ladies.—What greater treat than to be in the company of well-informed and intelligent ladies! What more intolerable than to be under the necessity of keeping up conversation a whole afternoon and evening with those who have eyes and see not, ears and hear not, and thoughts and think not.

Smoking.—What is more common and more impolite than smoking cigars in crowded rooms on public occasions?

ON THE MANUFACTURE OF POTASH.—It is remarkable that the manufacture of potash, which has formed so considerable and profitable an employment for the industry of the northern states, has never been in operation in Virginia. Of course no satisfactory answer to the following letter of inquiry on this subject was to be obtained at home—and it was therefore sent to a gentleman who resides at Cayuga county, New-York, whose location, as well as his general information, it was inferred, would enable him to give the statements required. He has kindly complied with the request, by sending the communication inserted below. We also add the article on this manufacture in Rees' Cyclopædia.—[Farmers' Register.]

The enormous waste of wood throughout Virginia and the southern states, induces me to inquire whether a considerable saving to the country may not be effected, by converting a portion of it into potashes, and by preparing the bark of certain descriptions of trees, for tanning and dyeing.

In clearing our lands, it is the practice to burn all the wood which is not used for fence rails, and no care is taken of the ashes. It is well known that from the branches and twigs of oak, a larger quantity of potash is obtained than from the same weight of the trunk of the tree, and that the branches are entirely lost with us in clearing land.

Now, my object in addressing you is to request that you will obtain and publish the most simple and clear directions for making and preparing potashes for market, embracing the cost of all requisite apparatus, labor, &c., and the quantity produced from a given weight or measure of white oak, red oak, and other woods common to our country. The preparation of bark for exportation might also be valuable, if the mode of doing it was made known to our farmers. QUERIST.

William Culver, Esq., from whom the following particulars were obtained, has been concerned in the manufacture of potash for many years.

It is estimated that 450 bushels of good *house ashes* will make a ton of potash. Some skilful workmen can produce more. The manager of his works contracted to make a ton from every 425 bushels; and he has even made that quantity from 420 bushels; but it is more than common workmen can produce.

Of *field ashes* about 550 bushels are required to make a ton. This difference is owing to impurities, and to a want of compactness in the ashes. Great care should be used in scraping them up, so as to exclude as much dirt as possible. It requires more care to work them.

At this time, house ashes are worth 10 cents a bushel, at the ashery; and field ashes, 7 cents.

One man can manage an ashery, consisting of the different vessels hereafter to be mentioned. There ought to be six leaches (or leach tubs), each ten feet long, constructed in the following manner: Lay two parallel sills, *one a little higher than the other*. On these *the bottom* of the leaches are laid—made of boards four feet long, not grooved and tongued, but *breaking joints*. These should be a foot high from the ground, so as to admit a trough under the lower edge to catch the ley, and to lead it into the ley tub, which may be a half hogshead sunk in the ground, and which will serve for *two* leaches.

The boards, four feet in length, which constitute the sides of the leach, are held together by two rectangular frames; the lower one resting on the bottom is eighteen inches, and the upper, near the top of the leach, three and a half feet wide.

On the bottom of the leach, lay small sticks crossing each other, to the height of two inches, for the purpose of letting the ley run off freely. On these place straw, to be four inches thick when well pressed down, to prevent the ashes from washing through, and mixing with the ley. Three bushels of lime to each leach are spread on the straw: its effect is to facilitate the melting of the potash. Every *third* time that the leaches are filled, new lime is to be applied after ejecting the old.

The ashes, when thrown into the leaches, must be made compact by pounding it down. In this way a leach will hold 60 bushels.

The leaches are worked in pairs. One pair may be *running* while the second is *soaking*, and the third is being *emptied* of old ashes, or being *filled* with new. This arrangement prevents the workman from losing time by waiting, or from being too much hurried at another time.

Two potash kettles, of 90 gallons each, are wanted for boilers, and may cost about $35 a piece. These are set in arches. Several sugar kettles, containing about 20 gallons each, will also be wanted for *coolers*.

The manufacture of potash is generally commenced in the spring, when there is no longer any danger from freezing.

Ley, too weak to bear an egg, is not put into the boilers, but is used for wetting such leaches as have not begun to run.

During the boiling, a *dipping pan* is placed in each boiler, resting on the bottom, to catch the *black salts* as they settle; and when the pan is full, it is emptied from time to time. By this process, the ley will not become so thick, and consequently evaporate faster.

When the strong ley (such as will bear an egg,) from the *two* leaches, is all poured into the boilers, then increase the fire. For this purpose, *good dry wood is necessary*. The black salts are now to be *returned* to the boilers; and there will be a danger of the liquid running over. This is prevented by dipping it up and pouring it back into the boiler. Repeat it till this disposition to rise over shall disappear. Then raise the heat still more till the potash is perfectly *melted*, and becomes almost as thin as water. It is then to be dipped out into the coolers, *being careful to have them* VERY DRY. Let the potash stand till next day—it will crack into four quarters. Turn it out, and it is fit to barrel.

My informant suggests there would be a great advantage in having some person to start the works who was well acquainted with the business. D. T.

Article on Carbonate of Potash in Rees' Encyclopædia.—The potash of commerce, or black potash, as it is also called, is universally procured from the combustion of wood; and therefore its preparation can only be undertaken with success in those uncleared countries where are vast natural forests, and where, from the imperfection or distance of transportation, the value of timber is no more than that of the labor required to fell it. The only districts in Europe in which any considerable quantity of potash is made, are the mountainous forests in Germany, and the extensive woodland tracts of Poland and Russia. The British market is principally supplied from the United States, a country in which, from its rapid increase of population, there is a constant demand for cleared land, for the purpose of agriculture; and therefore, where timber is looked upon rather as an incumbrance than as contributing either to the beauty or the value of the ground on which it stands.

The American method is to pile up the wood, as soon as it is sufficiently dry to burn, in large heaps, and reduce it as quickly as possible to ashes: these ashes are then put into a wooden cistern, with a plug at the bottom of one of its sides, and a quantity of water, sufficient to make a strong lixirium, is added. After standing for an hour or two, the plug is withdrawn, and the water holding the potash in solution runs out, leaving the earthy parts till impregnated with a portion of alkali in the cistern. This solution is then evaporated to dryness in iron pans, and hastily fused into compact reddish brown masses of semi-caustic potash, in which state it is fit for market.

In Germany, where the value of wood is greater, care is taken to select such kinds as are the richest in potash; the combustion is slower, and of course the temperature lower, in consequence of which, but little is lost by volatilization; the lixiviations also of the ashes are judiciously repeated till the alkali is extracted.

Proportion of potash afforded by 100 parts of wood of different species, which being previously dried, were burned by an open fire to ashes; and which, after being weighed, were lixiviated till all their saline contents were extracted.

	Ashes.	Salt.	Salt from 100 parts of Ashes.
Oak,	1.03	0.15	11.1
Beech,	0.58	0.12	21.9
Aspen,	1.22	0.07	6.1
Fir,	0.34	0.04	13.2

[Academy of Sciences at Paris.]

VENISON HAM MANUFACTORY.—The following article has been marked for our notice in the Wheeling Gazette, and an inquiry propounded as to the truth of the statements. In reply, we can assure the writer than an establishment for "using up" sheep was in operation in this neighborhood, until very recently; but is now suspended for the present, although it may be resumed during the next autumn. The business, however, is not, we think, of the stamp the writer supposes; being conducted, not by foreigners, or the agents of foreignres, but by two respectable farmers from near Geneva, state of New-York, where they have carried on the above business largely for eight years past. So far from seeking to destroy the sheep, or injuring the wool growing business, at a present sacrifice, they make a profit of from twenty-five to forty dollars per hundred on the sheep they butcher, and this alone is their inducement. It is supposed the effect will even prove beneficial to the breed of sheep, by destroying the indifferent stock heretofore reared by our farmers, and causing their place to be supplied by a superior breed. So far from being true that they seek only ewes, wethers are preferred, though they generally take entire flocks, paying an average of about $1 12½ per head. The sheep are collected in large numbers, the heads chopped off, the *horns*, especially the crookedest and largest, saved for various purposes, the *tongues* cut out and salted away in barrels as a great delicacy, the rest of the *head* is then thrown into the boiler, where, two or three hundred together, they are well steamed, and afterwards pressed in large cheeses, in a press resembling a cider press, thus forcing out every particle of tallow; the cheese is then thrown to the hogs, of which a great quantity are kept to be fed on the offal. The *skins* are then taken off, and having been stripped of the wool, they are sold to morocco manufacturers, &c., the *wool* being converted into casinets, &c. and the *tails* sold to the hatters. The *intestines* are thrown to the hogs, unless saved for fiddle strings. The *blood* is saved for the salt manufacturers, and certain *bones* for handles, &c. The hams are then taken off, and having been properly cured, make first rate venison, being, as Jack Downing would say, "a great deal better by half than rale deer meat." The rest of the carcase is treated just as the head was. Thus, by economy, and carrying on the business largely, they make a handsome profit, where a person acting on a less scale would lose. The whole number slaughtered at their establishment in this neighborhood, last season, was 6700.

Various speculations have been offered, in this neighborhood, as to their object, and many believe with the correspondent of the Gazette, that their object is to destroy the sheep of the United States, for the benefit of foreigners. Such is not, however, the opinion of those best informed on the subject.

"The manufacture of this article is said to be carried on on a most extensive scale in the

neighborhood of Zanesville, Ohio. My information of the existence of this establishment was obtained by accident, and in the following manner. Waggon loads of *sheep-skins* from the west, to the number of several per week, have been discharged at this place, and upon inquiry from whence such immense quantities of such an unusual article could come, I have been informed that a *butchery* has been 'in the full tide of successful experiment' since the commencement of winter, a few miles from Zanesville. A gentlemen of this place who was at Zanesville during the first week of January, informs me that then about 4000 head was supposed to have been slaughtered. The fore quarters are thrown away, the hind quarters are sold at thirty-seven cents a pair, and all that could not be sold are salted down for *venison hams*. The skins are sold for twenty-five cents a piece, or forwarded to the eastern market. The revenue from the skins, hams and tallow, was estimated by the manufacturers (murderers more properly,) to be about one-half of the cost of the stock on foot. They are very particular in their selections. They never purchase entire flocks, nor yet the best animals of a flock, but the worst, confining themselves exclusively to *ewes*. It is to be wished that all the editors throughout the wool growing region of our country would put their readers on their guard in this particular; that if there are any farmers, who, of necessity, must sell any part of their stock to these agents of foreigners, that the venders may make it a *sine qua non* that at least a fair proportion of *wethers* be included in all such transactions of bargain and sale.—A. Z."—[Ohio Farmer and Mechanic.]

[The foregoing statements may be interesting to the connoisseurs of venison hams, whose consumption serves to support the new "manufactory" described. But, besides, the letter of A. Z. is worth notice, as a remarkable instance of the stupid jealousy which converts customers into imaginary enemies, and intended destroyers. It is strange, indeed, that any man who has the ability to write a decent paragraph for a newspaper, can believe that any "foreigners" have combined for the purpose of destroying our stock of sheep; and especially by the notable scheme of *buying them up in great numbers, and at full prices*. The smallest share of reasoning power ought to show, that any new demand and additional market for sheep, (even if it was to burn brick-kilns with their carcases for fuel, as travellers say has been done in Buenos Ayres,) must increase the profit of their breeding, and of course their numbers. But though this supposition of A. Z. is more manifestly foolish and ridiculous, it is not more untrue than another which has been extensively received, and has helped greatly to support our system of protecting duties to force manufactures—viz.: that foreign manufacturers would combine to sell their commodities to us at losing prices, for the purpose of underselling and breaking down the factories of this country, if the latter were not thus protected by law. Such combinations may be supposed possible, whenever our farmers will "combine" to sell their wheat at only half the price which it would command, for the purpose of ruining the cultivators of the high priced lands of Europe, and then monopolizing the supply of the grain market.

Remarks.—With all deference and respect for the Editor of the Farmers' Register, who makes the above observations on the tariff, we cannot but think that he has classified a very dissimilar set of notions or opinions—those of A. Z., and of those who support a tariff. Buying up sheep would, as he says, increase the demand, and consequently give additional employment and business to our countrymen; but flooding our country with foreign goods would have an effect directly the reverse. Besides, it is perfectly easy for the extensive factories of Europe to send off their excessive stock to this country, and materially injure our infant establishments. They can do this without much effort to "combine;" but it would be impracticable to get our farmers or exporters to unite for the purpose of injuring the grain growers of England. Neither would the corn laws of England permit the objects of such a combination to be carried into effect. When the Editor of the Farmers' Register sees infant manufactories of various kinds rising up in all the towns and villages, and along the banks of the rivers of Virginia and other Southern States, giving every possible encouragement to industry, skill and capital, we presume he will deplore any measures of government that would jeopardize their prosperity and existence.

Ponds.—When clay cannot be obtained for the bottom and sides of ponds, the earth is made more retentive of moisture by working it. For the convenience of cattle the margin should as much as possible be formed of stony or gravelly materials.

Clover Seed in Oak Casks.—In this country we believe most of the clover seed sent to market is in casks made of oak. This wood injures the color of the seed, giving it a dull brown appearance, resembling old English seed. In England all kinds of clovers are kept in sacks made of hemp. Farmers would, therefore, do well to send their clovers in bags.

Indian Rubber Water Proof.—This substance is every day becoming of increasing importance. For harness and various other farming and domestic purposes, it will at no distant day be used. The following is from the Ohio State Journal:

Having heard much said of late in favor of Jewitt's water-proof, as rendering leather perfectly tight, I witnessed an experiment on Saturday last, showing the improvement of the leather as to its durability; and were there not a number of the most respectable citizens present, I should hesitate to state the fact and publish it to the world. Two pieces of leather, o. equal thickness, were tried upon a grindstone, under a pressure of a weight of 12 lbs. In the first place, the leather in its natural state was placed upon the stone, which was revolved 1500 times; then the piece saturated underwent the same operation 3000 times; and when compared, it was found not to be so much worn as the leather in its original state. From the test made, I have no hesitation in giving it as my opinion, that leather thus prepared will last twice as long as that in its original state. When it is considered that in addition to its rendering leather perfectly impervious to water, it adds 100 per cent. to the wear, its value to the American people is almost incalculable.

P. H. Olmsted.

Columbus, March 18, 1834.

From the Eclectic Journal we extract the following:

In our former notices of this valuable article, we omitted mentioning particularly its beneficial applicability to all kinds of leather harness. It could not fail to have been observed by every individual who has had the opportunity, that those parts of harness composed of leather are, in general, injured infinitely more by wetting and drying, both by rain and sweating of the horse, than by friction or actual wear. By wetting and drying, the leather becomes hard and unpliant, in which condition it cracks and breaks. But let the harness be saturated with the water proof, and neither water nor sweat can penetrate it, and the leather must remain as soft and pliable after exposure to wet as before. This will certainly render the harness more durable as well as less liable to chafe or gall the horse.

In conclusion, we will repeat the suggestions of Col. Jewitt, that his composition will be equally as applicable to wood as leather, and by excluding the water from its pores, vastly increase its durability. If future experiment confirms this suggestion, as we have strong reason to hope it will, the advantages which hydraulics, and particularly the shipping interest, will receive from this discovery, will be incalculable.

Spring and Winter Vetch.—"It is impossible to distinguish a difference between the spring and winter vetch seed; but if any imposition is practised on a farmer by his seedman, it may be detected as soon as the plants spring up; the winter vetch comes up green, and the spring vetch of a deep brown purple color: this observation may be useful, as it enables the farmer, in case of sowing a spurious sort in the autumn, to detect the imposition: if he finds he has sown the spring kind at that time, he must plough his land again, and apply it to some other purpose, for the spring kind will not stand the winter. I should recommend every farmer purchasing the winter vetch to have the seed warranted; and when he has got the right sort, afterwards to raise his own.—[R. W. Lloyd.]

Bloody Murrain.—About two years since, Mr. Benjamin Bailey, a farmer of the town of Clarence, Erie County, handed us a statement of an examination which he made (assisted by two of his neighbors, Col. Miner and Mr. Goff,) of a cow which he had lost by the above disease, which has proved very common and fatal to cattle in this section within a few years. The statement was mislaid at the time—but having been accidentally discovered a few days since, we think we cannot do a better service to the farming community than to lay it before them, as the season for the disease is approaching, and by knowing what is, *probably*, the true cause of it, they may be enabled to guard against its effects.

Mr. Bailey states, that on opening the cow he found about two pails' full of blood in the stomach; the liver was completely rotten, covered with purple spots, and full of holes, filled with clotted blood. On searching the liver in the direction of these holes, he found a dead worm, similar to that which produces the butterfly, and a *live leech*. The liver was perforated in all directions, and a hole made through the main artery, near the gall, about large enough to admit of a pipe stem. When the holes came near the skin of the liver they ran off in another direction, as though the animals making them had turned back—and it was where these holes thus approached the skin, that the purple spots on the liver were visible. The leech lived about twelve hours after it was taken from the liver.

As several of Mr. Bailey's cattle were affected in a similar manner with the cow which died, he prepared a draught of alum and sulphur, and gave it to them, which soon relieved them.

Mr. B. imagines that the cattle swallow the leeches when drinking from stagnant pools of water in the warm season, when the streams are in a measure dried up.—[Lockport. Cou.]

Potatoes.—Being something of a *Murphy*, we obtained five or six kinds of potatoes last fall, in order to ascertain which were the best, taking the season through, and our verdict is decidedly in favor of the *pink eyes*. They are *now* mealy and white as the best Genesee flour. Perhaps no potato can be found which *keeps* better. They are not so early as the Chenangoes or Philadelphias, but they are superior in quality, nearly or quite equalling the Butmans, and *yielding* twice as well. Farmers who are about planting would do well to try them.—[Kennebec Journal.]

IMPORTANT DISCOVERY.—We learn that Mr. George B. Moores, of this village, has invented a process for the application of steam power, so that boats, carriages, &c. may be propelled with the same velocity they now are, with one-fifth of the fuel which is now used for that purpose. From the representations of several scientific gentlemen who have investigated the subject, we feel warranted in predicting that Mr. Moore's discovery will prove as beneficial to the world as was the original invention of steam-engines.—[Union Village Banner.]

Specification of a Patent for Furnaces for Generating Heat by Friction, and applying the same to economical purposes. Granted to JOHN W. COCHRAN, *Lowell, Middlesex county, Massachusetts, November* 19, 1834.

To all whom it may concern, be it known, that I, John W. Cochran, of Lowell, in the county of Middlesex, and state of Massachusetts, have invented a *Friction Furnace* for generating heat without the consumption of fuel, and applying the same to economical purposes; and I do hereby declare that the following is a full and exact description of my said invention.

Although the fact that heat may be generated by friction is one of universal notoriety, it does not appear that the idea of applying this heat to economical purposes has ever been practically acted upon; I, however, have ascertained by satisfactory experiments that it may be done to great advantage. The most convenient way of effecting the object is to prepare two metallic disks, or cylinders, say of cast iron, in the form of common mill stones, and to cause one of them to revolve against the other, under considerable pressure, which pressure may be given by the weight of one of the disks, or by that of a vessel containing water, or other fluid, to be heated, the bottom of which may take the place of one of the disks; or by weighted levers, or in any other way of producing pressure which may be preferred. When I make two disks of this description to rub against each other, I form one or both of them somewhat hollow towards the centre, on the touching sides, as a bearing on that part would tend to diminish the friction towards the periphery, where the motion is the most rapid.

There are many ways in which I contemplate the application of this principle, as, for example, I intend sometimes to cause two disks, such as I have described, to revolve one against the other, by power derived from a water wheel, or from any other convenient source, and to enclose them within a drum, or chamber, into which a current of cold air shall be admitted, and whence it shall be conducted by suitable tubes, after it has been heated by being brought in contact with the disks; thus using it to warm the apartments of any building, or for other purposes. Where steam is preferred, I intend sometimes to allow water to fall in a small stream upon the heated disks, and to conduct it thence through tubes to wherever it may be required. Where steam is to be generated to drive machinery, the bottom of the boiler may be made of suitable form, and to bear upon a disk revolving below it; or the bottom may be perforated, to allow the shaft of a disk revolving in the inside thereof to pass through, and to be turned by any suitable apparatus, by power derived from the steam generated by the heat from the friction, or from any other source.

These various modes will sufficiently illustrate the principle upon which I depend for rendering the heat which was latent, sensible, and active; but I do not intend by this enunciation to restrict or confine myself to the form of apparatus herein described, or to the objects to which it may be applied, but to vary the same in any manner which I may find most convenient and efficient.

It may at first appear that the powerful friction necessary to engender sufficient heat to be usefully employed as a substitute for that extricated in the combustion of fuel, will produce a rapid wearing out and destruction of the rubbing apparatus; I, however, have ascertained, satisfactorily, that when the metals become heated, there is a degree of repulsion produced between them which admits of but little abrasion of their substance.

What I claim as my invention, and for which I ask a patent, is the application of the heat generated by the friction of pieces of metal against each other, to the purpose of heating air, generating steam, and, in fine, to all the economical purposes to which such heat is applicable, proceeding, in its production, upon the principles herein before set forth. JOHN W. COCHRAN.

Observations on Flame—Mr. Rutter's Late Discovery. [From the London Mechanics' Magazine.]

SIR,—There is something very pleasing in applying chemical knowledge to the explanation of the various phenomena that are daily before our eyes. I now propose, with your permission, to make a few observations on the flame of a candle that is now burning on my table. I shall observe, at first, that the heat of the flame melts the tallow, which then ascends the wick by capillary attraction, and is in consequence subjected to intense heat; the tallow is next decomposed, and the principal part of the resulting gas is carburetted hydrogen, which is again decomposed in the following manner: When this gas is first formed, it expands in every direction, and thus getting into the hottest part of the flame, its carbon is deposited in an abundance of fine particles; the hydrogen now increases in volume three and a half times the bulk it possessed when in perfect chemical union with the carbon. This expansion, which is probably again more than doubled by the intense heat of the flame, causes the hydrogen to appear at the outer surface of the flame, where it unites with the oxygen of the atmosphere, and envelopes the white and luminous flame, or that part containing the particles of carbon, with a thin sheet of blue flame.

I now come to a very difficult part of this subject, which, I think, will, when satisfactorily explained, have a great tendency to illustrate Mr. Rutter's discovery of the advantage of burning water with coal-tar, which is by far the greater part carbon; *the difficulty is, to account for the appearance of oxygen in the interior of the flame.* Lord Bacon proved that flame would burn within the interior of flame; and Dr. Ure, in his *Dictionary of Chemistry*, relates a similar experiment, and gives the following definition of flame, founded on the researches of Sir H. Davy: "The flame of combustible bodies may, in all cases, be considered as the combustion of an *explosive mixture* of inflammable gas, or vapor, with air." It may seem very presumptuous in me to differ with such authorities as Davy and Ure, but my defence is, that I regard truth more than all the authorities in the world. I question the truth of the above definition of flame on this ground, that the flames of "*explosive mixtures*" give no light, but afford merely a feeble blue flame. This is the case with explosive mixtures of coal-gas, oil-gas, and indeed all gases containing carburetted hydrogen or olefiant gas; surely, then, the flame of a candle, or of olefiant gas from a small aperture, exhibits phenomena very different from the combustion of an explosive mixture. After giving the aforementioned definition, Dr. Ure says, alluding to flame: "It cannot be regarded as mere combustion at the surface of contact of the inflammable matter. This fact is proved by holding a taper or a piece of burning phosphorus within a large flame made by the combustion of alcohol. The flame of the taper or phosphorus will appear in the centre of the other flame, proving that there is oxygen even in its interior part." This is, in my opinion, no proof whatever of oxygen being in the interior part. There may be carbonic acid, or there may be vapor of water, &c.; and what confirms this conjecture, is the well known fact that carbon can decompose carbonic acid, or at least unite with one atom of its oxygen, thus forming carbonic oxide; for carbonic acid is composed of one atom of carbon and two atoms of oxygen. Carbonic oxide may therefore decompose the vapor of water formed by the union of the hydrogen with the oxygen of the atmosphere, or carbon itself may decompose the vapor of water; this latter is my opinion. But, it may be asked, how does the vapor of water find its way into the interior of flame? In the case of the candle-flame, I apprehend, it is by the union of the hydrogen with the oxygen of the atmosphere at the surface of the flame; and I have before explained that the expansion of the hydrogen, when the carbon is deposited, is the cause of its being projected with considerable velocity to the outer surface of the flame. When the hydrogen thus unites with the oxygen, water is formed, which being immediately subjected to extreme heat, expands with great velocity into vapor, which is projected, not only into the interior of the flame, but from the sides where it is formed. The carbon decomposes this vapor, and, by uniting with its oxygen, hydrogen is again formed, which may be repelled by the sudden expansion which it must have when the carbon seizes the oxygen, to the exterior of the flame, where, uniting with oxygen, it may again return to the interior—and thus play backward and forward many hundred times in a second. This play of affinities would, however, soon cease, were not the supply of hydrogen kept up by the continual and *first* decomposition of the carburetted hydrogen. That vapor is projected from flame is proved when I hold the point of a pair of *cold* steel snuffers within, say three-eighths of an inch of the flame, by moisture being deposited; but the particles are so fine, and in so small quantity, that a dull appearance only of the steel results, which quickly vanishes on their removal. Should the snuffers be held very near the flame, small drops of water will appear on their removal. As this deposition of moisture takes place when the snuffers are held under the flame, and at a distance of perhaps one-fourth of an inch, I conclude it to be projected with considerable velocity, in the manner before pointed out, from every part of the flame; and I further consider that this atmosphere of vapor may, in some measure, account for the luminous halo which appears to surround the flame of a candle.

There are many other considerations which induce me to believe the above conjectures to be nearly right. One is, that if carburetted hydrogen be mixed with a very small portion of common air, its power of giving light is impaired, for part of the carbon is then burnt in its gaseous combination. Another circumstance that induces me to question the presence of oxygen in the interior of the flame of carburetted hydrogen, is the fact, that a small portion of carbon, when deposited on a small fibre of the wick of a candle, will remain in the white part of the flame without undergoing decomposition. Now, if oxygen were present in an uncombined state, and at such an elevated temperature, who can doubt that an immediate decomposition of the carbon would take place? But, it may be asked, why does not this portion of carbon decompose the vapor of water which you consider to be present in all flames containing hydrogen? One cause may be that the particles of which it is composed attract each other with part of the force, and cannot therefore exert their full force to decompose the vapor. That coal-tar cannot be burned like oil is because it is nearly all carbon, and has not sufficient hydrogen to form the requisite quantity of vapor—what it does possess being only sufficient to supply part of its carbon with oxygen; the other part of the carbon deposited rises from the flame in dense black smoke. It may be further inquired why does not the black smoke, or the carbon

ceous particles arising from a hot flame, unite with the oxygen of the atmosphere, and so form carbonic acid, which is invisible? I apprehend it is because of their low capacity for heat, and the instantaneous radiation of heat from their surfaces; the particles being thus deprived of their heat cannot unite with oxygen, which is also cold—for the union of carbon with oxygen will not take place under a dull red heat. Is it possible, then, to burn coal-tar without producing smoke? Nothing is more easy to a person possessing a slight knowledge of chemistry: let a long tunnel of fire-brick be constructed, leading to a chimney, and let a coal fire be lighted till the sides of this tunnel become of a white heat; if a small stream of coal-tar be now introduced, it will inflame, and as the particles of carbon deposited cannot lose their heat, and will be floating in a strata of air heated to redness, their union with oxygen must take place, provided sufficient air be admitted with the stream of coal-tar.

I shall now conclude with a few words on Mr. Rutter's project of introducing a small quantity of water with the tar. The water will first be formed into vapor, which will require some portion of heat; now this vapor may be decomposed by the carbon, when the hydrogen will again unite with the oxygen of the atmosphere, and vapor will again be formed, till the decomposition of all the carbon is complete. Perhaps two gallons of water is more than one gallon of coal-tar could be made to decompose, and it would be very gratifying to me to see the actual fact proved by experiments so conclusive as to satisfy the doubts of the most sceptical. Your Salisbury correspondent states, that "15 lbs. of coal-tar," which I suppose is about equal to an imperial gallon, "and an equal bulk of water," say 10 lbs, "and 25 lbs. of Newcastle coke, will be found equal to 120 lbs. of Newcastle coal." But this is on the supposition that the whole of the water will be decomposed, which I consider a practical impossibility, for a large portion of the carbon must unite with the oxygen admitted to inflame the hydrogen.

Should Mr. Rutter, however, have formed too high an estimate of the heat gained by his process, there are other advantages attending it which must not be overlooked; for two intense chemical actions are supported with the same volume of air that either of them would require separately, which is of great importance in its application to steam boilers. Your Salisbury correspondent has certainly blundered in endeavoring to explain this. (See his paragraph, page 452, beginning with "Another condition," and ending with "gases.") He is also wrong in saying, (page 453,) "The sides of the furnace in that vessel formed a part of the boiler, consequently their temperature never exceeds that of the contained water." How then is the heat communicated, if both sides are of the same temperature? According to my experience, the sides of boilers are often many hundred degrees hotter than the contained water, and sometimes red hot just at the outer surface.

I have no other object in making these remarks than to elicit truth, and prevent scientific men from trusting too much to "hope's delusive mine." I remain, sir, your obedient servant,

WILLIAM WITTY, Jun.

NEITHER LIGHTING NOR HEATING BY GAS OF MODERN ORIGIN.*—In several situations removed from any volcanic action, so far as is visible on the surface, natural jets of inflammable gases are seen to issue, affording decisive evidence of chemical changes that are taking place at various depths beneath. Of these, some have served the purpose of the priest to delude mankind, while part of the others have been more usefully employed.

Carburetted hydrogen gas is well known to be the "fire-damp" of the coal districts, and to issue from the coal strata; collecting in the ill-ventilated galleries of collieries, and, when sufficiently mixed with atmospheric air, exploding with great violence when approached incautiously with an unprotected flame, spreading mourning and misery among the families of the miners. If the genius of Davy had merely produced his safety lamp, it would alone have united him to the applause and thanks of mankind.

As carburetted hydrogen is so freely liberated in coal mines, it would be expected that it should occasionally be detected on the surface, and accordingly it has been so discovered.* Inflammable gas also occurs in other situations, where there is no reason to suspect the presence of coal strata. Of this the well-known jets of gas in the limestone and serpentine district of the Pietra Mala, between Bologna and Florence, afford an example.

Captain Beaufort describes an ignited jet of inflammable gas, named the Yanar, near Deliktash, on the coast of Karamania, which perhaps once figured in some religious rites. He states that, "in the inner corner of a ruined building, the wall is undermined so as to leave an aperture of about three feet in diameter, and shaped like the mouth of an oven; from hence the flame issues, giving out an intense heat, yet producing no smoke on the wall." Though the wall was scarcely discolored, small lumps of caked soot were formed in the neck of the opening. The hill is composed of crumbly serpentine and loose blocks of limestone. A short distance down the hill there is another aperture, which, from its appearance, seems once to have given out a similar discharge of gas. The Yanar is supposed to be very ancient, and is possibly the jet described by Pliny.

Colonel Rooke informed Captain Beaufort, that high upon the western mountain at Samos there was an intermittent flame of the same kind; and Major Rennel stated, that a natural jet of inflammable gas, inclosed in a temple at Chittagong, in Bengal, is made use of by the priests, *who even cooked with it.*

According to M. Imbert, gaseous exhalations are employed at Thsee-Lieon-Tsing, in China, to distil saline water, obtained from wells in the neighborhood. Bamboo pipes carry the gas from the spring to the place where it is to be consumed. These tubes are terminated by a tube of pipe clay, to prevent their being burnt. A single well (of gas) heats more than three hundred kettles. The fire thus produced is exceedingly brisk, and the caldrons are rendered useless in a few months. Other bamboos conduct the gas intended for lighting the streets and great rooms or kitchens.

M. Klaproth notices other jets of inflammable gas in China; one, now extinguished, is stated to have burnt from the second to the thirteenth century of our era.

It also appears that M. Rœders, inspector of the salt mines of Gottesgabe, at Reine, in the country of Tecklenberg, has for two or three years used an inflammable gas, which issues from these mines not only as a light, but for all the purposes of cookery. He obtains it from the pits that have been abandoned, and conveys it by pipes to his house. From one pit alone a continuous stream of this gas has issued for sixty years. It is supposed to consist of carburetted hydrogen and olefiant gas.

Inflammable gases are also found to proceed from ground charged with petroleum and naphtha. The inhabitants of Baku, a port on the Caspian Sea, are supplied with no other fuel than that derived from the petroleum and naphtha, with which the earth in the neighborhood is strongly impregnated. About ten miles to the north-east of this town there are many old temples of Guebres, in each of which there is a jet of inflammable gas rising from apertures in the earth. The flame is pale and clear, and smells strongly of sulphur. Another and a larger jet issues from the side of a hill. If, in the circumference of two miles, holes be made in the earth, gas immediately issues, and inflames when a torch is applied. The inhabitants place hollow canes into the ground, to convey the gas upwards, when it is employed for the purposes of cookery, as well as for light.

ON THE BURNING OF WATER.—From a recent number of Silliman's Journal, we copy the following respecting the "American Water Burner," which we have several times mentioned. We omit several pages of theoretical reasoning, and confine our extracts entirely to the *results*.

"The experiments which I have made have proved practically, that an engine with a power equal to driving a boat four miles an hour, and a railroad car twice that distance in the same time, with ten or twelve passengers, may be made for one hundred dollars: and that the engine with its preparing vessel (a substitute for the boiler in the steam engine) need not weigh one hundred pounds—and the expense of working it will not exceed ten or twelve cents per hour. There are certainly no difficulties to be removed. These facts have been verified practically and repeatedly before hundreds of people.

"Some recent improvements in the mode of constructing lamps for burning water, to produce light and heat, have perfected the operation for these purposes. It now carries demonstration in every form. For instance, when you put by one fourth of a gill of spirits of turpentine into the lamp, and as much water, and raise the temperature to less than that of boiling water, the vapor that comes over will be in the ratio of about equal parts of each. If, in the combustion of these vapors, a due proportion of air is mixed and inflamed, it will in a few minutes boil a two quart copper tea kettle. If small brass wire is brought over and in contact with the flame, it instantly drops in pieces—small copper wire is readily melted—fine iron wire, if the proportion be right, is instantly inflamed—and thin sheet copper, with a small piece of silver, or silver soldered on it with borax, being exposed to the same, the silver melts in a few seconds, and the copper very soon; and this is done while the vapor is not concentrated in any way, and issues only with a velocity about the same as that of gas in gas lights.

"This discovery gives every promise of supplying a much cheaper fuel, (as a fuel,) exclusive of a clear saving of light, than any one now in use. It is my intention to introduce my lamps, &c. into use as soon as I conveniently can."

The following remarks by Professor Silliman will show how much importance may be attached to these discoveries:

"We have seen some of Mr. Morey's experiments, and can testify to the correctness of his statements, as regards the great amount of heat and light evolved by combustion of the vapor of water mixed with that of spirits of turpentine, or alcohol, and duly modified by common air. The results are very striking and beautiful, and we can see no reason why they should not prove of *great practical utility*."

A fossil ship containing sculls and bones, both human and brute, has recently been discovered at New Romney, on the coast of England. The earth has been removed so as to display her whole form, a clinker built craft, and tunnel fastened, having only one mast, being 54 feet long by 24 wide. Curiosity has been much excited by its development.

RHEUMATISM.—Gum elastic, tied around the parts affected, will produce a cure.

---

* From Mr. De la Beche's Geological Manual (third edition, considerably enlarged in 1833), one of the most instructive and entertaining works which the new and important science of geology has yet produced.—ED. M. M.

* It appears very remarkable, that in the coal districts of the British isles, where such a large amount of carburetted hydrogen is annually produced, means have not been adopted for making an economical use of this gas, both as it respects light and heat.

PRINT IN BINDING

OF THE HARVEST MOON.—It has long been known that the moon when full, about the time of harvest, rises for several nights nearly at the time of sun setting; but the cause of this remarkable phenomenon has not been so long known. This appearance was observed by the husbandman long before it was noticed by the astronomer; and on account of its beneficial effects in affording a supply of light immediately after sun-set, at this important season of the year, it is called the *harvest moon*.

In order to conceive the reason of this phenomenon, it must be recollected that the moon is always opposite the sun when she is full, and, of course, in the opposite sign and degree of the zodiac. Now, the sun is in the signs Virgo and Libra in August and September, or the time of harvest; and therefore the moon when full, in these months, is in the signs Pisces and Aries. But that part of the ecliptic in which Pisces and Aries is situated makes a much less angle with the horizon of places that have considerable northern latitude than any other part of the ecliptic, and therefore a greater portion of it rises in any given time than an equal portion at any other part of it. Or, which is the same thing, any given portion of the ecliptic about Pisces and Aries rises in less space of time than an equal portion of it does at any other part. And as the moon's daily motion in her orbit is about 13°, this portion of it will require less time to rise about those signs than an equal portion at any other part of the ecliptic; consequently there will be less difference between the times of the moon's rising when in this part of her orbit than in any other.*

At a mean rate the moon rises 50 minutes later on any evening than she did the preceding evening; but when she is full about the beginning of September, or when she is in that part of her orbit which rises with the signs Pisces and Aries, she rises only about 16 or 17 minutes later than on the preceding evening; consequently she will seem to rise for a few evenings at the same hour.

Although this is the case every time the moon is in this part of her orbit, yet it is little attended to, except when she happens to be *full* at the time, which can only be in August or September.

In some years this phenomenon is much more perceptible than in others, even although the moon should be full on the same day, or in the same point of her orbit. This is owing to a variation in the angle which the moon's orbit makes with the horizon of the place where the phenomenon is observed. If the moon moved exactly in the ecliptic, this angle would always be the same at the same time of the year. But as the moon's orbit crosses the ecliptic and makes an angle with it of 5° 9′, the angle formed by the moon's orbit and the horizon of any place is not exactly the same as that made by the ecliptic and the horizon. Some years it is greater and others less, even at the same time of the year, for it is subject to considerable variations, owing to the retrograde motion of the moon's *nodes*.*

If the ascending node should happen to be in the first degree of Aries, it is evident that this part of the moon's orbit will rise with the least possible angle, and, of course, any given portion of it will require less time to rise than an equal portion in any other part of the orbit. The most favorable position of the nodes for producing the most beneficial harvest moons, is therefore when the descending node is in the first of Aries, and of course the descending in the first of Libra. When the nodes are in these points 13° of the moon's orbit, about the first of Aries, rises in the space of 16 minutes in the latitude of London, and consequently, when the moon is in this part of her orbit, the time of her rising will differ only 16 minutes from the time she rose on the preceding evening. When the moon is in the opposite part of her orbit, or about the signs Virgo and Libra, which make the greatest angle with the horizon at rising, 13° of her orbit will require 1 h. 15′ to rise, although it were coincident with the ecliptic; and if the nodes be in the points just mentioned, the same portion of the orbit will require 1 h. 20′ to ascend above the horizon of the same place; and so much later will the moon rise every night for several nights when in this part of her orbit. As the moon is full in these signs in the months of March and April, they may be called *vernal full moons*.

Those signs of the ecliptic which rise with the greatest angle, set with the least; and those that rise with the least set with the greatest. Therefore, the vernal full moons differ as much in their times of *rising* every night, as the autumnal or harvest moons differ in the times of their *setting*; and they *set* with as little difference of time as the autumnal ones *rise*, supposing the full moons to happen in opposite points of the moon's orbit, and the nodes to remain in the same points of the ecliptic.

In southern latitudes the harvest moons are just as regular as in the northern, because the seasons are contrary; and those parts of the moon's orbit about Virgo and Libra, where the vernal full moons happen in northern latitudes, (and the *harvest* ones in southern latitudes,) rise at as small an angle at the same degree of *south* latitude, as those about Pisces and Aries in *north* latitude, where the autumnal full moons take place.

At places near the equator this phenomenon does not happen; for every point of the ecliptic, and nearly every point of the moon's orbit, makes the same angle with the *horizon*, both at rising and setting, and therefore equal portions of it will rise and set in equal times.

As the moon's nodes make a complete circuit of the ecliptic in 18 years 225 days, it is evident that when the ascending node is in the first of Aries at any given time, the descending one must be in the same point about 9 years 112 days afterwards; consequently there will be a regular interval of about 9½ years between the *most* beneficial and *least* beneficial harvest moons.

* It would tend very much to make this phenomenon understood if a terrestrial globe were at hand and rectified for the latitude of London, when reading this description.

* The *nodes*, or points where the moon's orbit crosses the ecliptic, move backward about 19° in a year, by which means they move round the ecliptic in 18 years 225 days.

ASPARAGUS.—Among the vegetables at a Horticultural Exhibition in England, were some heads of asparagus forced by Mr. Kendall, in four days, by hot water.

GOOSEBERRY CATERPILLAR.—Watering with lime water, always when the sun shone strongly, effectually destroys them, without injuring the leaves.

REMARKABLE PLANTS.—*Large Leaves.*—In the foliage of plants, there is a vast diversity in superficial extent, as well as thickness. There are leaves of microscopic minuteness; and others of an immense size. Some species of coltsfoot are of considerable magnitude; and leaves of the rheum palmatum have been found to measure five feet in their longest extent, by three feet in their greatest breadth. These, though remarkable for this climate, sink into insignificance in comparison with tropical foliage; the leaves of the dancea elliptica measure, in many instances, not less than six feet in length, and nearly eighteen inches in diameter in their widest part. The leaves of the strelitza regina grow to the height of three or four feet by eighteen inches, and sometimes leaves of this plant will be found still larger. The leaf of the musa paradisinca, or plaintain, has been found to measure more than ten feet in length, by two feet at the base. Some leaves of palms far exceed even these dimensions. A leaf of the corypha umbraculifera, or great fan palm, or talipot tree, sometimes measures five and thirty feet in circumference, a sufficient covert for thirty or forty men. The rafia palm of Madagascar is said to measure sixty feet. A frond of the ciboa palm serves the natives of Africa as an umbrella, and thus protected Mungo Park from the tropical rains. In the South Sea Islands, the leaf of the talipot palm serves as a parasol, as it does the purpose of an umbrella in the East Indies. At Manilla, one of Philippine Islands, a Jesuit missionary, had a dwelling constructed for him under two palm leaves, where he said mass, and slept secure; it was a complete covert from the storm, and no rain could penetrate. In consistency also, the fronds or leaves are very various: airy, like gossamer, or the texture of the most delicate film, up to the coriaceous mass of the Nopal, or the thick succulent leaves of some mysembryanthemums, and the rigid ones of the agave. The leaves of the paliscourea rigida, large, tough, and unyielding, rustle like parchment in the wind; and the cactus spinosissimus, and some yuccas and agaves, might form a stockade or circumvallation, which would defy an enemy with all the armory of war. Indeed, we once remember to have seen, near to Orbitello, in Italy, a field, of which the agave americana was the entire fence, and a most impenetrable barrier it seemed to be.

Leaves are sometimes beautifully polished, and shine like ivory. The begonia nitida has leaves which possess a beautiful lustre: the magnolia, the holly, and the laurel, have leaves that seem to be varnished. Each leaf of the double cocoa-nut is twenty feet long and ten feet wide. Sometimes the leaf is silky, or satiny, resembling the pericarp of honesty. The silver tree, protea argentea, presents a beautiful example of a shining satiny leaf: some leaves are so clothed with down as to resemble white velvet: the verbascum thapsus, or great mullein, is a familiar instance of a thick woolly covering for the surface of the leaf. Sometimes this satiny or woolly integument may be stripped off entire, a process which is managed with considerable dexterity by the natives of the south of Africa; the stalks and leaves, thus treated, supply stockings, gloves and caps. According to Humboldt, caps are formed of the spathes of certain palms, which possess a coarse net-like tissue. The inner bark of cerra druida, or shirt-trees, supplies the Indians with garments resembling sack-cloth.—[Murray's Philiology of Plants.]

MOISTURE IN SHADE OF TREES.—In confirmation of a circumstance *prima facie* so incredible, I have here to record a phenomenon, witnessed by myself, equally extraordinary. I had frequently observed in avenues of trees, that the entire ground engrossed by their shady foliage was completely saturated with moisture; and that during the prevalence of a fog, when the ground without their pale was completely parched, the wet which fell from their branches more resembled a gentle shower than

any thing else; and in investigating the phenomenon, which I am disposed to consider entirely *electrical*, I think the *elm* exhibits this feature more remarkable than any other tree of the forest. I never, however, was more astonished than I was in the month of September last, on witnessing a very striking example of this description. I had taken an early walk, on the road leading from Stafford to Litchfield: a dense fog prevailed, but the road was dry and dusty, while it was quite otherwise with the line of a few *Lombardy poplars*; for from them it rained so plentifully, and so fast, that any of them might have been used as an admirable shower bath, and the constant stream of water supplied by the aggregate would (had it been directed into a proper channel) have been found quite sufficient to turn an ordinary mill. —[Magazine of Natural History.]

Locomotive Powers of Seeds.—The forms of seeds are very curious, and infinitely diversified; some are like a horn, a crescent, a shield, or a horse-shoe; others resemble a snail (medicago) or a caterpillar (scorpiurus)—others again will be found like a shuttlecock, as the cyanus; all these forms, we reasonably conclude, have their design—"nothing cometh by chance." These peculiarities in structure are connected with their preservation, their dispersion, their insertion into the soil, and the depth to which they penetrate, as well as their mode of germination. The feather grass, stipa pennata, is plumed like an arrow, which will preserve the seed in a particular direction; and as soon as it darts down upon the earth, it worms or screws itself into the soil, to a certain depth; when the plume, having fulfilled its office, breaks off, flies away, and becomes the sport of the winds. Though this be a very singular phenomenon, the shuttlecock seeds of the thistle and dandelion afford examples of contrivances of a somewhat similar kind. The seeds of the tillansia, or wild pine of the West Indies, a parasite on other plants, are supplied with long threads, which have the property of coiling themselves round the branches of trees, and thus become fixed, until the seeds germinate. Many seeds are remarkably susceptible of moisture. The seeds of the musk cranesbill are connected with an apparatus which unscrews itself when moist, and coils itself up again when dry. When these seeds are moistened, they begin to move, and the minute hairs serve as feet to direct their movements. When the bearded oat is left for sometime undisturbed in the barn, along with other grain, it is found to have escaped from the husks, and crept to a distance from its former attachment. The grains of equisetum sylvaticum, when placed on a table, and viewed through a lens, present an appearance like insect motion, and may be seen to leap over an intervening object. If we shake a frond, for instance, of the horse tail fern over damped paper, when examined by a lens, the minute seeds will appear to crawl about like so many spiders. Thus the application of the awn of the wild oat for the purpose of hygometry, and the still more sensible Indian grass, employed in Captain Kater's ingenious and beautiful instrument. The peculiar inclination in the inequalities of the surface in the awn of barley will prevent its retrogression, while its expansion by moisture will impel it forward from the spot where it originally fell: its march onward, therefore, will be incessant from moisture, and it will merely pause in its progress, when that moisture exhales. Mr. Edgeworth constructed an automaton figure on the principle of the animated oat, which, in a few weeks, walked across the room. The screw-like structure of the bearded oat is very apparent, resembling in some measure the remarkable stem of the screw pine, which is perhaps designed to serve a somewhat similar purpose in its relations to moisture: if we breathe on the seed, the awn, which is a little elevated above the plane of the horizon, will be put in motion, and describe the segment of a circle. When the avena fatua, or mad oat, is therefore moistened, it writhes like a being possessing life; of this description is the seed of the geranium cicutarium, and others. The seed vessel of the didymo carpus rexii, which is twisted up in the form of a spiral coil, unwinds with moisture, and drops its seed under circumstances favorable to their germination. The microscope reveals some extraordinary phenomena of this kind; and Mr. J. E. Bowman pointed out to me some singularities in minute cryptogamous seeds, which, when affected by moisture, and seen under the microscope, appear all life and motion, particularly the trichia and sphærobolus, where, from a point invisible to the unaided eye, the seed vessel voluntarily expands, and rolls forth its millions of globes, as indeed its name in Greek implies.

The dispersion of seeds also supplies us with a chain of curious contrivances, admirably suited to the purposes for which they are designed; and it is a subject of regret, that these singularly constructed species of mechanism have not been so minutely investigated as the interesting subject merits: well might Forskal say, "*miro nec ad huc investigato mechanismo, propelluntur semina.*" The capsule of the violet will project its contained seeds to a distance of several feet; and the elastic arillus of the wood sorrel will eject them over a considerably greater space. The euphorbia coccum, (Gærtner,) is also remarkable in this respect, as well as some of the ferns, which possess an elastic ring for the purpose; geranium, fraxinella, and others. The crackling of the capsules or furze in a warm summer day must be familiar to many, and is sometimes the only sound which breaks the stillness of the landscape. The scales which enclose the seeds of pines sometimes open suddenly, and disperse their contents. The noise occasioned by this mechanical impulse on the air may be often heard at a considerable distance: "This crackling voice," says Mr. Keith, "was observed and traced to a fir tree, namely, pinus pinea, at Kendlesham parsonage, on July 14, 1808, by two young gentlemen, my pupils, who thought the tree was bewitched, till the cause of the noise was pointed out to them." A species of wild cress, cardimine impatiens, suddenly unfolds its seed vessel on being touched. I have, when handling the plant, and more minutely examining the structure and elastic apparatus of the seed vessels, been temporarily deprived of vision, by the impulsion of the seeds into my face. The balsam, balsaminum, is not less curious than the rest of these, and has been not inappositely, from the elastic force employed by the seed pod in the dispersion of its contents, called "touch-me-not." In these cases, the power of the projectile seems to reside in the elasticity of the valves of the capsule.—[Murray's Physiology of Plants.]

On the Keeping of Apples.—The fruit room ought to be placed in a dry cold shady situation, free from wet, and sunk three feet or four feet in the ground. The shelves should be of beech or sycamore, about two feet wide and ten inches asunder. Fir shelving tastes the fruit. There is no need of fire in fruit rooms, for a little frost does not injure apples. There ought to be ventilators, as a good deal of air is necessary after the fruit is first gathered and stored.

When the apples begin to drop, the ripest are gathered, and taken to the fruit room in shallow baskets. These are taken singly out of the baskets, and placed upon the shelves.

"After the apples have been ten or twelve days on the shelves, the process of *sweating* is considered as accomplished. They are then wiped one by one with clean soft cloths; by this means a kind of *coat* or *shell* is formed, which proves a safeguard to the fruit. The shelves are wiped at the same time on both sides until quite dry. During the whole time the apples are in sweat, plenty of air is admitted, if the weather is clear and dry; but, if damp, the room is entirely shut up. I think it is when the apples are sweating that they imbibe the flavor of whatever materials they are laid upon; and, if due attention is given to them at that time, there is little chance of their afterwards acquiring any bad taste."

The fruit is turned over about the end of January, and, with the shelves, wiped, if any moisture appears. After this time, the room is closely shut up; for the admission of much air, after the end of January, is found to occasion shrivelling. All the time the fruit is in the room it is carefully looked over every four or five days; and in the month of August it is handled with gloves, the hands of gardeners being generally moist at that season. When apples are frozen, no artificial means must be used to thaw them. If, when in sweating, they are affected by the frost or damp, they will be materially injured.

"I have gathered apples, and laid them upon one another in large baskets in a vinery, kept up to about 60° Fahrenheit, for 10 days or a fortnight: they were then covered with sweat. I had them wiped, conveyed to the fruit-room, and laid on the shelves, as already described. I have never found the flavor of apples treated in this way to be in the least impaired."

Apples in England.—The reporter of the Covent Garden Market, in Loudon's Magazine, observes that, apples are supplied altogether from our own growth; very few foreign have yet been imported, or are likely to be, as our own stock is yet very good: indeed, with tolerable seasons, we shall always have enough, as our plantations are now much extended, and, from the introduction of so many new varieties, generally more productive. Of pears we have no supply at present: it will require time, care, and attention, to effect a change in this article, equal to the present demand for it.

Six Weeks' Turnip.—Mr. Cameron, in September last, presented to the Newick Horticultural Society a specimen of the six weeks' turnip, and also a sample of the Maltese turnip: the former was considered deserving the attention of the agriculturist, from its hardy nature and the quickness of its growth.

Spontaneous Vegetation of Broom in a Wood after a Fire.—Sir: The following facts I can vouch for; perhaps they may excite inquiries not altogether unprofitable. About seven years ago, the branches broken off by the wind, in one of my plantations, being carried off, the twigs were gathered and burned. In a year or two, but where the ground was burned, and amidst the charred remains of the fire, some plants of the common broom (Spartium scoparium L., Cytisus scoparius Lk.) appeared, and grew vigorously. This seemed odd to me, and I showed them to some of my family; but the same burnings, and the same growth of the same sort of plants, have since been repeated. This I cannot account for by even the vaguest guessing. I am sure there were no broom plants among the small branches burned; and, if there were, the seed must have been consumed: in fact, we have only a very few plants of broom on the grounds. Then whence came the seed? For I do not believe in vegetable creations in our times, though Ray seems to countenance something of that kind by his "seminal tincture" in the earth; and even if the earth preserved the function to originate without parentage, fire does not seem to be the engine to effect such an operation. The fire weed in America, and other particulars of the same kind, will, of course, suggest themselves to you.—George Ensor. Ardress, Dec. 20, 1833.

Salt.—At no period since the commencement of the salt-manufacture in this county was that interest more depressed than at the present time. Salt works are unsaleable at any price much above the inconsiderable value of the materials of which they are composed for other purposes. Salt is very low. Salts have been made at 31 and 32 cents per bushel, and there is little prospect for an improvement at present.—[Barnstable Journal.]

[From the Village Post.]

LAND-BREEZE BETWEEN THE TROPICS.

"The forests of Brazil are filled with aromatic plants, whose perfumes are often wafted many leagues to sea."

To the billow-borne pilgrim, alone on the seas,
How sweet comes the perfume of land with the breeze!
'Tis the breath of a summer, eternal in prime;
The kindliest fragrance of sun-gladdened clime!

Those wanderings of sweetness, how welcome they are!
That tell of a country unseen and afar.
Like the morning, their advent aye ushers a smile;
And the rover's heart dances in joyance the while.

To cheer his lone vigil at midnight, they tell
Of meadow and mountain, of forest and dell—
Till his eye o'er the ocean forgetteth to roam,
And he walks in his slumber the fields of his home.

Thus oft on life's billow, with bark tempest driven,
The voyager fancies the breathings of Heaven!
The past and the present remembering no more,
He greets in his vision the world that's before. C.

The Dandelion, or Wild Endive. [From the Boston Transcript.]

Mr. Editor,—I was pleased to see yesterday, in our excessively dear market, that refreshing salutary herb, the dandelion, so seldom to be met with at this early season. Its exorbitant price, however, being above my limited means, I was obliged to deny myself the gratification of a mess of this wholesome plant, from which many persons, for the same potent reason, turn aside to the tough acescent flatulent cabbage sprout, which the stomach of a drayman or stevedore alone can concoct.

The dandelion is generally considered among us, without our knowing the why and the wherefore, as wholesome. For the benefit of those who live to eat, as well as the more useful class, those who eat to live, I will point out a few of its virtues, so well established in Europe, that in the shops of the druggists it may be found at all seasons of the year, in a dried state, in syrups, or otherwise preserved, while our *scientific* apothecaries despise or neglect it, though they are continually stuffing plants they know little of into bodies of which they know less—heedless, in their thirst for gain, of the pernicious consequences which follow their want of a thorough knowledge of their profession—in which they resemble our dentists, one half of whom care not how many jaw bones they dislocate, provided they can keep their own in motion. So much for charlatans: let us return to our object.

An infusion of the roots or leaves of the dandelion makes a refreshing drink in many diseases. It is used much in broths for the sick, by the French, who consider it aperitive and febrifuge. It is esteemed also by them as an excellent remedy in the jaundice, and in obstructions of the spleen, as well as in inveterate gouts and rheumatisms. With the juice of its leaves and roots, mixed with rhubarb, they make a vermifuge syrup for children.

In Germany they dry and reduce to powder the roots of the dandelion, which they mix, in proportion of one-third, with their coffee, on account of its cooling properties, preferring much this mixture to pure coffee or tea, as more nourishing and healthful. In short, dandelions have always been considered in France and Germany as peculiarly useful in all visceral obstructions, when eaten as greens or sallad, or used in ptisans. From their stimulant deobstruant powers in promoting bilious discharges, they have from long experience found them highly efficacious in all biliary infractions of the liver, by their keeping the body gently open, and by their diuretic and attenuating properties.

In the dropsy the dandelion has been known for ages to be of great utility. "The ancients," says Willinch, "were better acquainted with the properties of this excellent vegetable than those modern practitioners, who appear to be more anxious to introduce exotics imported from distant countries, than to ascertain the qualities of those numerous medicinal plants which grow in our own climate."

On visiting a friend, at his seat in a neighboring town, who complained of a distressing fullness of his system, arising from what he called *trifling* indulgences and his sedentary habits, I mentioned to him the virtues of the dandelion, and recommended, as the season for gathering them was fast approaching, a free use of it, with a severe abstinence. He observed, the procuring and preparing dandelions was attended with much trouble. You must first, said he, send at a distance to dig them up, bring them home, wash them, pick off the decayed leaves, steep them in water to take off their bitter taste, then you must boil them in soft water, strain them and dish them up, while a *simple* order in hieroglyphics from a physician will bring me, from the apothecary's, a dose of calomel, the sovereign remedy for all complaints. Give me, said the lover of Madeira and good cheer, Dr. Calomel—he is my favorite—away to the Old Nick with your dandelions, your sorrel and your spinage. Do you think I am a horse to eat grass? Give me the mineral medicines, such as mercury, arsenic, zinc, steel, antimony, iron, copper and lead, throughout all their preparations; these are the bull dogs and blood hounds of the pharmacopolist and modern practitioner, which take hold at once of the disease and shake it to extermination. None of your abstemiousness, your roots, herbs, French ptisans and French soups, so thin that one would suppose they were made of four leaved clover, for me. Let me have a good joint, beef and cabbage sprouts, chowder and shin soup, or calves' head, turtle fashion. When the system wants reducing, or when the bile troubles me in the spring, Dr. Calomel will do more for me in an hour than all your *Bouillons pointu*, grasses and fastings, for a month. After this sally, I advised him, as best suited to his state of mind if not of body, to offer for his supper a barbecued tom cat stuffed with tenpenny nails. He smiled, and I left him. I have since heard he is laboring under a severe attack of the jaundice, and that he has been forced to have recourse to that admirable remedy in his case, the *dandelion decoction*, which his jaundice physician assures him will work a cure.

My friend is not alone in his opinions, extravagant as they may appear, and therefore our mineral doctors, who seem to reject all things which rise above the earth, as remedies, can never lack support or partisans, while, like our *analytico-synthetic* President, they have such devoted subjects to bear them out in their *experiments* on the constitution, and in the healing, which too often, as in his case, proves the killing art. "How many men have you killed to acquire such a colossal reputation?" said Frederick the Great to an eminent physician. "Not half so many as your majesty," replied the son of Esculapius.

I must conclude, Mr. Editor, by advising all such of your readers as may be troubled with repletion or flatulencies, or who are threatened with vertigo, dropsy, jaundice, or any bilious obstructions, to make free use of that precious gift of nature, the dandelion. DR. SIMPLE.

HIRING A COOK.—"If it were only a wife now, that I wanted, there would be hope for me—but a cook!—well, as it storms too hard for you, my love, to venture out, I must go," said Mr. Manning.

"I regret the necessity, my dear; but this is the day, and if the woman does not hear from me, she will doubtless engage herself; and she refused to call here."

"How I wish we could have a patent invention for cooks as well as cooking stoves!" thought Mr. M. as he entered the house where his intended cook resided. She appeared a large formed, well dressed female, with quite an air of importance. In fashionable life she would have made what is called a showy woman.

"Your terms are"—

"Four dollars a week, sir."

"That is more than we have been accustomed to give. My family is not large. Five in the parlor, only; and we have a boy and chambermaid."

"You may hire cooks cheaper, I suppose, but that is my price."

"I will give you two dollars and fifty cents—we have never paid but nine shillings."

"It is no consequence to talk about it," said madam cook, indignantly. And she swept out the room with a gesture that might have become Fanny Kemble, when she turned up her nose at the price first offered her by the manager of the Tremont.

"Let me calculate," thought Mr. M. as he walked home; I cannot expect to realize more than fifteen hundred clear from the profits of my store—it may be less. And now, $4 per week for a cook—$1 25 each for a boy and chambermaid—board of the three $2 each, at the lowest—is $12 50 per week, or six hundred and twenty-five dollars a year.

"Then for rents, rates, provisions, fuel, clothing, all et-ceteras for my own family and our parties, I have $875; and my daughters want masters, and my wife must, for her health's sake, go one journey in the year.

"There must be something wrong in the present fashions of society. An educated man thinks it no shame to do the business of his profession, whatever it may be. I work hard in my store every day. But women who are educated must not put their hand to household employment; though that is the only task we assign to our females. It would degrade a lady to be seen in her kitchen at work. O, how many are now sitting at ease in their parlors, while their husbands, fathers, brothers, or sons, are toiling like slaves! and what is worse than toil, anxiously bearing a load of care, lest their exertions should not meet the expenses of their families.

"It cannot continue thus. If women who receive a fashionable education are thereby rendered incapable of performing their domestic duties—why men will marry cooks, by and by, and shun the fashionable as they would paupers.

"Yet it may be the pride and folly of us men, after all. We want the whole command of business, and the whole credit of management. We do not communicate to our wives and daughters the embarrassments we suffer or the need we have of their assistance—at least co-operation: I will see what effect this confidence will produce."

The two elder Miss Mannings (the youngest is at school) takes each her turn in the kitchen every other week, and with the counsel of Mrs. M. and the help of the boy, every thing in the house department goes on like clock work. They say they will never be troubled with cooks again. And what is better, Mr. M. declares that his daughters were never so gay and contented for a month together before—and never had so much time for their music and studies.

Early rising and active employment for a few hours each day are wonderful promoters of health and cheerfulness; and leisure is never appreciated, till it is earned by efforts to be useful.—[Ladies' Magazine.]

PURSUITS OF AGRICULTURE.—In reviewing the lives and the end of men, who have deservedly become illustrious from a career of virtuous greatness and distinction, nothing has arrested more of my observation than the great number who have retired from the highest station to the calm and peaceful pursuits of agriculture, and who have exhibited in its interest and pursuit, to the evening of life, a zeal only equalled by that which they had previously bestowed on objects of the most ardent ambition. Our own country presents those examples; other nations their proportion; and all parts of the globe in proportion to the degree of civilization and true refinement they possess.